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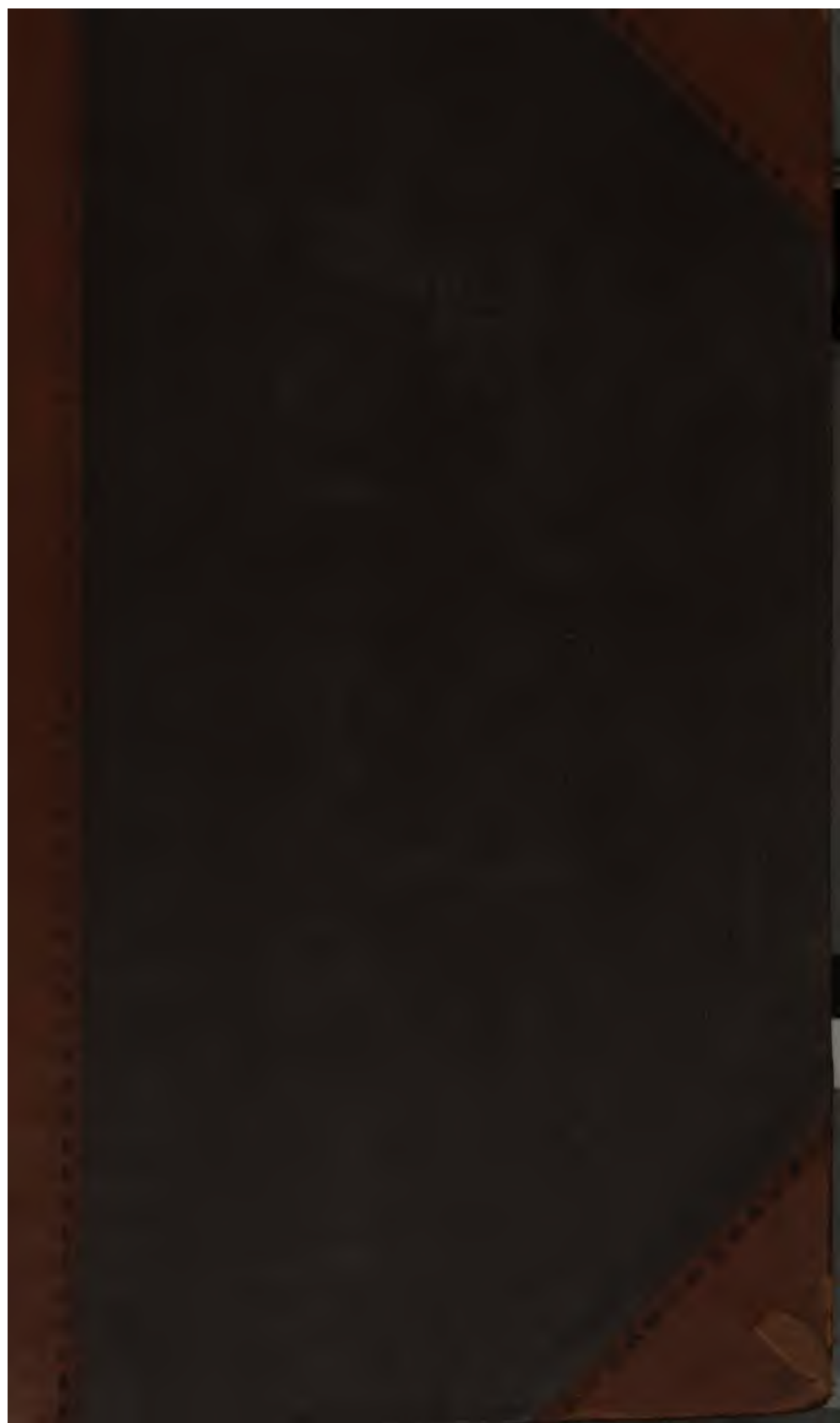
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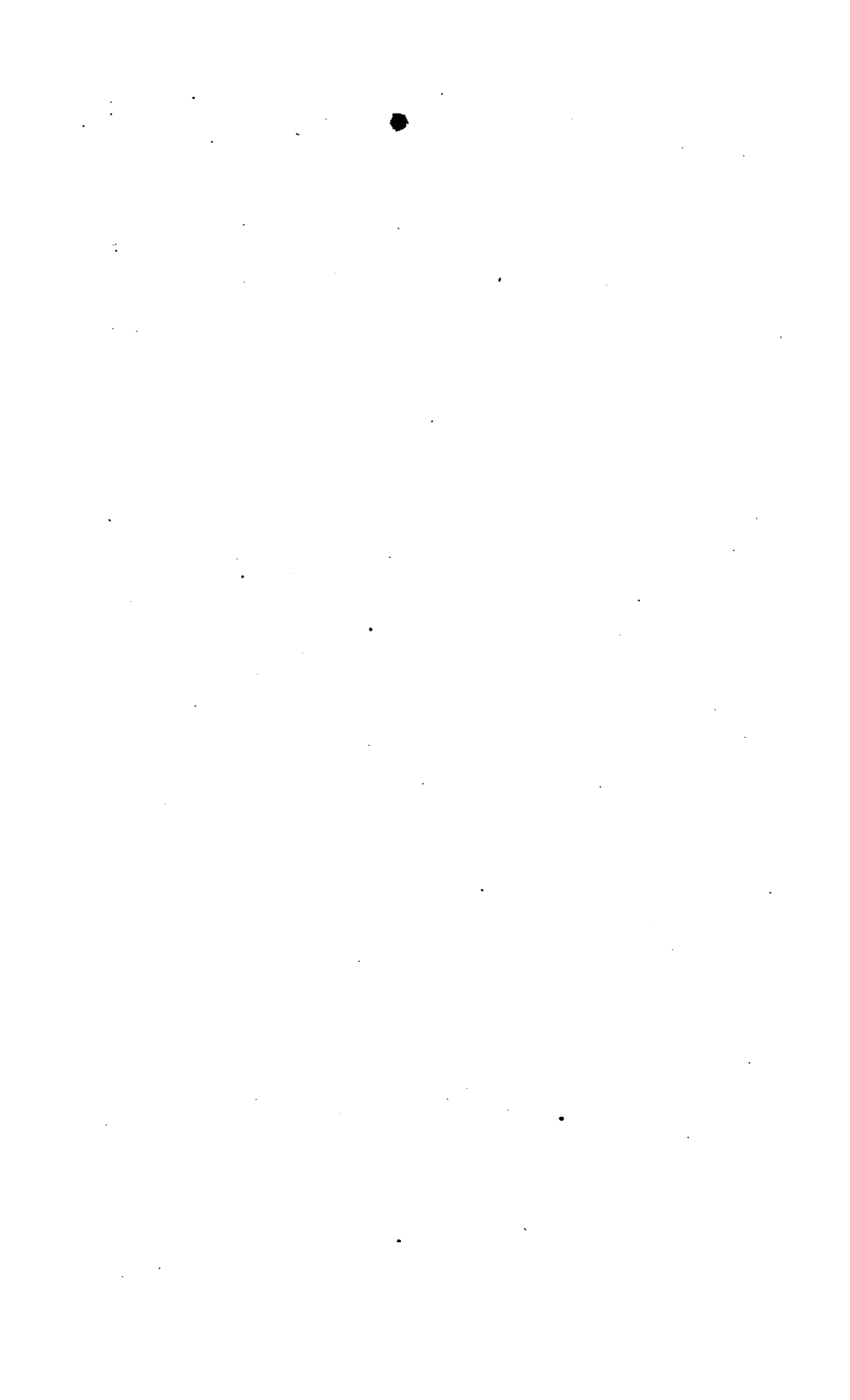
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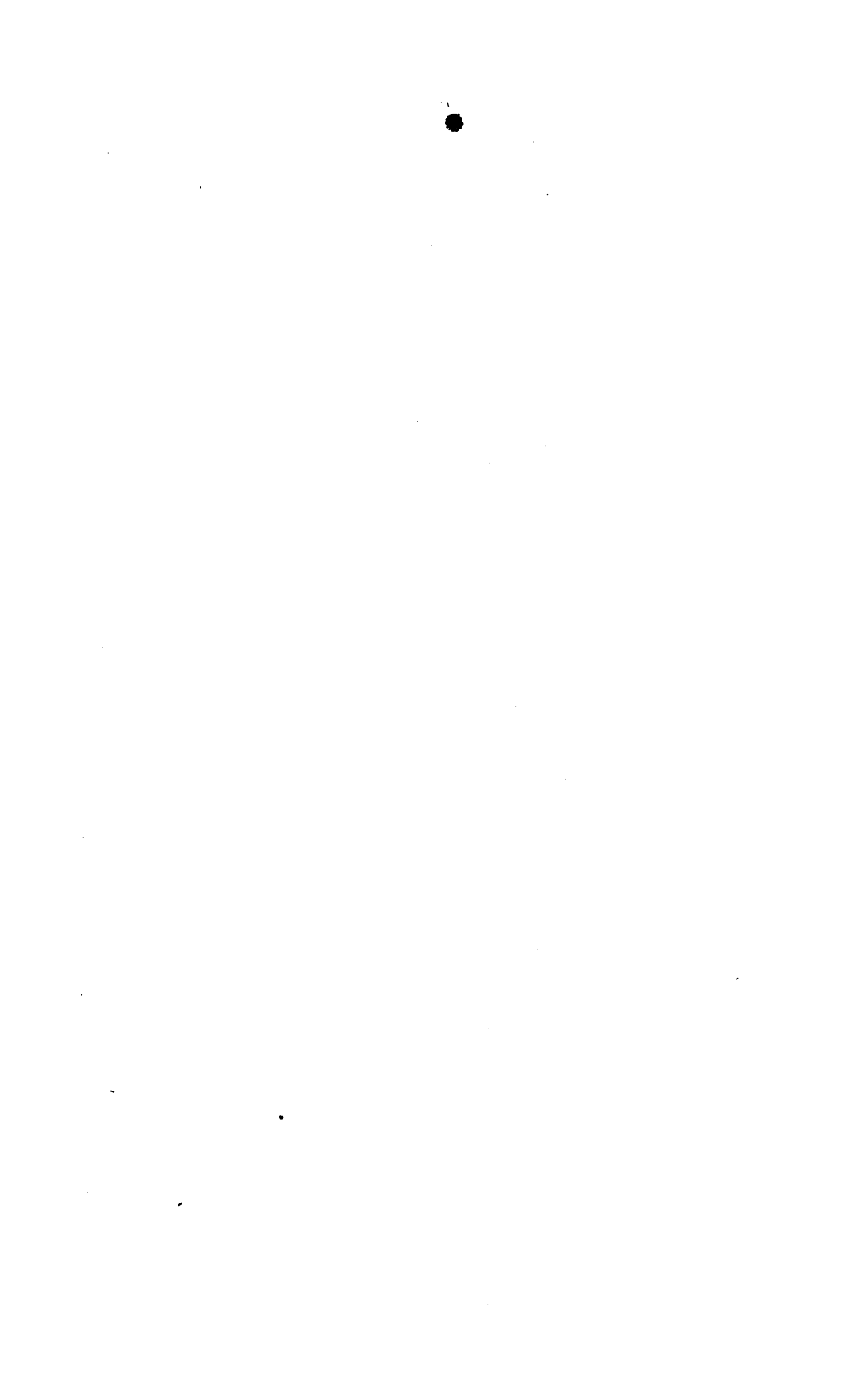
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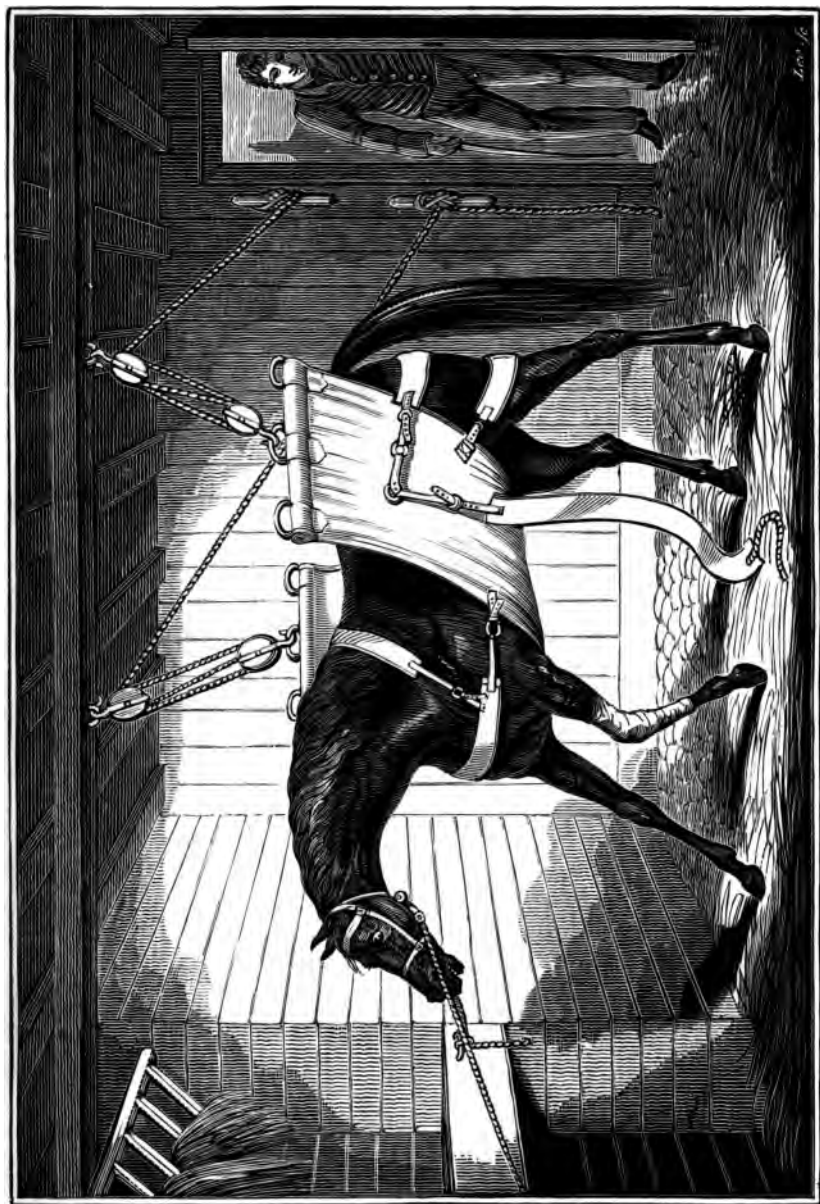












THE METHOD OF SLINGING OR SUSPENDING A HORSE.

V. 12. 1. 1851

**HIPPOPATHOLOGY:**  
A  
SYSTEMATIC TREATISE  
ON THE  
**DISORDERS AND LAMENESSES**  
OF  
**THE HORSE;**

WITH THEIR MODERN AND MOST APPROVED

**Methods of Cure;**

EMBRACING

The Doctrines of the English and French Veterinary Schools; the Opinions of  
Professor Coleman, Director Girard, Hurtrel d'Arboval, and  
other British and Foreign Veterinarians.

WITH ILLUSTRATIVE WOODCUTS.

---

By WILLIAM PERCIVALL, M.R.C.S.;

VETERINARY SURGEON IN THE FIRST LIFE GUARDS;  
CO-EDITOR OF "THE VETERINARIAN;"  
AND AUTHOR OF "THE ANATOMY OF THE HORSE."

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VOL. I.

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"A righteous man regardeth the life of his beast."

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LONDON:  
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PATERNOSTER ROW.

1834.

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## P R E F A C E.

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THE Author offers the present production to the notice of the Public as a work in which the Principles of Veterinary Medicine and Surgery are deduced from their natural or legitimate sources—the Anatomy and Physiology of the Animal. Upon no other foundation can a rational practice be instituted for the Cure of Disease ; and even this requires tempering by Experience ere it be rendered, to the utmost extent, suitable and effectual. The Author's experience is derived from twenty years' service in the Army.

Next to the solicitude of rendering his work of value in a medical or practical point of view, the Author has felt desirous of adapting it for general use ; and, on that account, has refrained from the introduction of technical language beyond what appeared essential to the completion of his primary design, as well as refused admission to other Names for Diseases than those by which they are popularly known and understood : though these appellations he has, as occasion seemed to require, both qualified and explained.

The Nosological Arrangement of the work is one the Author has been led to adopt after much unsatisfactory research among the many plans of the kind already in existence. He is fully conscious of its imperfections : but, after the signal failures that have occurred in Medicine in attempts to frame “ Systems of



## PREFACE.

Nosology," what is to be expected from writers on a Branch of that Science not even yet furnished with an Established Nomenclature for Diseases?

The Work, when completed, will consist of Three Volumes; which, though connected as a whole, are so constructed that each may be read apart, as a distinct treatise. The present Volume treats especially of the *External Disorders* of the Body. The Second will comprehend those that are *Internal*. While the Third will be devoted entirely to *Lamenesses*.

Hyde Park Barracks,  
April, 1834.

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## **Introductory Section.**

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### **I. HEALTH.—II. TRANSITION FROM HEALTH TO DISEASE.—III. DISEASE.**

---

## **HEALTH.**

A KNOWLEDGE of health, and of the ways and means that tend to preserve and improve it, comes no less within the province of the veterinarian, than do the rules of science by which he is taught to understand and cure disease: in fact, so reciprocally do the states of health and disease run into each other, that without an acquaintance with the former we should oftentimes find ourselves unable to detect the latter. The natural habits and peculiarities of the horse become objects of study as essential as are the structure and functions of the various parts of his body; it being by a close and consistent approximation to them that we are best enabled to keep the animal healthy and vigorous in his state of domestication. Although health and disease are conditions equally familiar to us in their true or genuine characters, yet to append correct definitions to them has perplexed our ablest medical writers; the difficulty lying in drawing a line in the midst of those forms and stages through which one state disappears in the other—those faint and evanescent links by which the two ends of the chain are united. Our great moral philosopher, Locke, used to say, that if we would but rightly estimate good and evil, we should find they lie much in comparison: in like manner, we may briefly sum up the general nature and characters of health and disease, and, with Locke, pronounce, “They lie much in comparison.”

THE SIGNS OF HEALTH, at least the outward signs, are too

notorious to need much description. We may say with Gibson, "When a horse eats a moderate allowance of hay and corn; when he drinks a moderate quantity of water; endures his exercise well, without being faint or dispirited; when his exercise does not take him off his feed, but rather quickens his appetite; when his coat is smooth, and looks wholesome; we may reasonably suppose, nay, even conclude, such a horse to be free from sickness." Provided, he should have added, there be no signs of disease present at the time; for a horse may possess all these evidences of health, and yet at the time manifest disease, and that even of a malignant nature. As medical inquirers, therefore, we look farther than this. We expect to find the functions of life performing with a degree of ease and perfection consonant with the well-being and comfort of the animal: at the same time we are prepared to meet with considerable variety in the performance of these functions in different individuals, and under diversified circumstances. The animal may eat or drink much or little in comparison with others; he may be naturally lively or naturally dull; he may sweat from little or much exertion; his pulse may run thirty or fifty beats in a minute; his breathing may be perceptible at the flanks, or it may not; and yet we may have no reason to suspect that he is out of health.

IN A STATE OF NATURE, animals can hardly be viewed as the subjects of disease: "The pure stream their drink; the simple herb their repast; neither care disturbs their sleep, nor passion inflames their rest." Within the course of the year, however, though they may not be troubled with disease, yet are their bodies subject to certain natural inward revolutions, which render them, if not actually ailing, at all events in a much less vigorous condition of health at one season than at another. The satin coat of the summer decays and falls, the same as the green leaf does, to be replaced by a thicker and more shaggy and plentiful pilous covering, to defend the skin from the inclemency of the approaching winter season; and this process of shedding is attended with an expenditure to the constitution that renders it, for the period, comparatively debile. The operation is renewed in the spring, together with its weakening influence; thus

throwing horses twice a year, at least, out of their usual health, to wit, during the moulting or shedding seasons. The apparent illiability of horses to disease while roaming in their native fields and forests, has impressed some people with the notion that they are altogether exempt from the evils our own frail and feverish flesh is heir to : so far from this being the case, unfortunately for them, from the moment they come to be stabled and subjugated to the dominion of man, they become, the same as ourselves, liable to pain and sickness, added to every injury that may happen to them through mismanagement and abuse.

IN A STATE OF DOMESTICATION, then, it is, that we look for the transition from health to disease. Were I roundly to assert that the diseases of horses had their origin in domestication, though I might be accused of stating that which was not strictly and unexceptionably true, yet should I be instilling highly useful practical notions of their general source into the mind of the veterinary student. Although all but exempt from suffering in their native condition, yet, when they come to be housed, and treated with what their lord and master considers as care and kindness, do they evince a great deal more susceptibility and tenderness in this respect than any indifferent person would believe them capable of. Even the sturdy ass and stubborn mule, hardy as they both are in their wild and natural state, when they come to be domesticated, bear disease extremely ill, and manifest exceeding softness of constitution under the effects of medicine ; of which I had some remarkable examples in the course of the Peninsular campaign, while in medical charge of a depôt, wherein sick mules and asses were received, as well as horses.

Seeing, therefore, that the horse in a state of nature is but rarely disordered, while in his domesticated or artificial condition he becomes, like unto ourselves, the subject of pain and sickness, the inquiry cannot fail to be interesting into the changes of external circumstances he undergoes in passing from one state to the other, together with the effects such changes have, and their mode of operation, on his constitution.



## TRANSITION FROM NATURE TO DOMESTICITY.

In following the horse from the field to the stable, we shall consider the changes to which he is subjected in a general point of view, without any reference or allusion to any particular local custom or system of management. These changes may be considered under the following heads:—*air, food, exercise, grooming, and shoeing.*

THE AIR an animal respires is to be regarded in reference to its *temperature* and to its *purity*. By nature the horse appears especially to require not only air that is cooling and refreshing to his nostrils, but such as is pure and fully fitted for the purposes of respiration: he is an animal of speed; his speed depends on his bodily strength; and the endurance of that strength is dependent on his wind; it therefore becomes necessary not only that he should be furnished with a capacious and complete respiratory apparatus, but that the air he respires—his *pabulum vitæ*—should be of that description best calculated to fulfil the ends of respiration. This he finds in the open field; but does he meet with it likewise in the stable? No! There he encounters an atmosphere confined within certain limits, and, from that circumstance alone, of a temperature higher than the one he has quitted: in addition to which it becomes heated even from his own breath and body, as well from those of other horses who may stand with him: worse than this, however, its oxygenous or vivifying principle becomes more or less consumed by the numbers who respire it; and worse than all, it becomes impregnated with *effluviæ* exhaled from the breath, the dung, and the urine, just in proportion to the number of inhabitants the same stable may contain, and to the circumscribed limits of the stable itself. The evils of this change in the state of the animal were not long concealed from the penetrative mind of Professor Coleman, and he accordingly adopted measures to remedy them; a step the most beneficial, and therefore the most praiseworthy and reward-worthy, he or any other man ever took to improve the domestic condition of the horse. It is almost unnecessary to

add that I allude to the *ventilation of stables*—in particular of the cavalry stables, in which numbers of horses live together, and in which, especially, disease would break out and spread, were it not for ventilation, and draining, and cleanliness. I have now served twenty years in the army, and every one of those years has added to my conviction of the truth of what I am at this moment endeavouring to inculcate.

FOOD, such as we are in the habit of feeding horses with, furnishes less cause for complaint. The hay we give in the stable is the same as the grass the animal eats in the field, only one is in a dry and more or less fermented state; the other in its natural, green, and juicy condition. Little more can be said against the oats, or even the beans, that are but occasionally given. Altogether, they possess more binding and more heating or stimulating properties than the growing herb: there is nothing, however, positively hurtful in their artificial or prepared condition: it is to the *quantity* of them that is consumed, and the *circumstances under which that consumption takes place*, that we are to look for any injurious effects they may produce. The only drink the horse will take, either in or out of the stable, is *water*. All that we have to guard against is, its being given at improper times, and in improper quantities. In a general way, drink is given too sparingly: after work is done, and while the body is cool, there can be no good reason for stinting the animal of this wholesome beverage. In a state of nature he helps himself to water; and from that circumstance, as well as the one of his food being green and succulent, drinks much less than when in the stable. I once made an experiment with two horses who had (leaden) mangers for containing their water, by the side of those that held their corn; and I found that when these mangers were filled, and the animals were allowed to drink *ad libitum*, they invariably consumed less fluid than when watered in the ordinary way.

EXERCISE, in regard to a stabled horse, may be considered in two points of view;—either as necessary or conducive to the animal's health, or as going beyond that, and coming under the denomination of *work*. That this latter, carried to excess, is

destructively injurious, nobody need be told ; and yet, had one to choose between this and a state of absolute rest, it would, perhaps, be difficult to say which of the two evils is the least. Exercise is no less necessary to the health of the body than food ; and though we are in the habit of oftener witnessing evil than good from what we call work, yet are there many horses, in particular in large populous towns, that are absolutely ruined for the want of exercise. The nutrient and stimulating diet of the stable demands a certain efflux and expenditure, the natural producer of which is exercise : and unless the one keep pace with the other, the equilibrium between them becomes destroyed, and health eventually must give way to disease.

GROOMING, under which is comprehended the several offices performed by the groom, will also come in for a share in rendering the animal's condition in the stable a still more artificial one. The very act of cleaning, effected, as it is, with currycomb and brush, works a change in the skin it never probably would of itself have experienced in the field ; added to which, the various trimmings that are practised, and the fair proportions that are too often curtailed, are all more or less concerned, directly or indirectly, in altering the animal's condition.

SHOEING.—More than this, and even, I would say, than all, however, is to be dreaded the farrier's interference. Shoeing is a necessary evil, and all our study and endeavour should be directed towards its application in that manner in which it can effect the least possible harm. Nature has made a horny case for the foot, we call the *hoof*, which is adequate to every end so long as the animal treads upon the soft verdure, that at the same time affords him nutriment : as soon as art, however, removes him from his native fields, and places him upon hard and gravelly roads, the same defence is no longer sufficient to protect the foot from the stones and other resisting bodies it continually strikes against, and therefore it becomes necessary to guard even the hoof with some hard durable material. This we do by nailing upon it a rim or half-circle of iron, we denominate a *shoe*. The grand and essential difference between the natural defence, and the one art has invented, is, that the former, while

it is sufficient for protection under all ordinary circumstances, is yielding and elastic, and easy to the foot ; while the iron shoe, inflexible and inelastic, puts a total stop to all that play of the horny case—called expansion and contraction—with which Nature has endowed it for the ease and welfare of the sensitive foot, as well as for the spring of the limb, and, indeed, body altogether.

## TRANSITION FROM HEALTH TO DISEASE.

A SUBJECT fraught with interest to every one engaged in the management of horses ; the investigation of which has for its object the verification of the old adage, that

“ Prevention is better than cure.”

I have already observed, that the horse in a state of nature is so rarely found ailing, as almost to warrant us in regarding him as exempt from disease altogether ; and have followed this observation up by laying it down as a principle, that his maladies, for the most part, are attributable to domestication. I now come to the investigation of those general causes that appear to be the most influential in producing them—in other words, to an inquiry into the effects of the changes incurred by domestication, and their mode of operation on the animal economy.

AN ANIMAL BODY is an union of several complex parts, we call *organs*, into one entire and indivisible whole, we call a *system* ; each of which organs is constructed in a peculiar manner ; and executes a correspondent function, every and all of them concurring to the accomplishment of one of the three grand objects of animal creation, viz., the preservation of life ; the continuation of the species ; and the maintenance of those living relations with the surrounding world by which the creature is enabled to provide for its wants, defend itself from danger, and enjoy pleasure or pain, corporeal or mental, according to its respective capacity or grade of organization. In so far as concerns the bare entertainment of a living principle, the vegetable enjoys it in common with the animal : but vegetable life is of simple description ; it lives exclusively within itself and but for itself, growing and perishing in the soil which gave it birth ; while the animal, to a similar internal or vegetable life, adds an external life ; one by which he lives and moves and acts in relation to every thing around him. These general differences were

first distinctly made out by Bichat. To the one he gave the name of *organic life*; because it was possessed in common by all organized beings: the other he called *animal life*; because he found it to be the exclusive attribute of animals. As organization is the object of investigation of *Anatomy*; so life is that of the study of *Physiology*. And all that our knowledge or conception amounts to on the mysterious subject of life, is, that instead of being some abstract or independent principle, as its isolated name would vainly lead us to suppose, it consists in the unremitting exercise of certain organic operations, whose end is the repair of the waste or expenditure necessarily incurred by their own action, together with that of the superadded animal faculties.

THE ORGANIC FUNCTIONS, summed up into two words, consist in *assimilation* and *excretion*; THE ANIMAL being those that either proceed from, or consist in, the faculties of *sensation* and *locomotion*. Our concern at present is more immediately with the former. It is a well established fact in physiology, that every part of an animal body is constantly running into a condition of decay from use, requiring renovation; a process that began with birth, and will end but with death. The aliment consumed by the animal is designed to form the renovating material. The food taken into the stomach therein undergoes its first change; subsequently passing into the intestines, within their cavities to suffer a further change of properties, and become finally converted into a pulpy mass, wherein is distinguishable a milky product we call *chyle*, which, in comparison with the other more consistent matters, is scarce and inconsiderable. The chyle is conveyed by numerous small vessels, named *absorbents*, into the veins to mix with the blood: the residue passing on through the bowels, becomes fæculent, and is expelled. Thus is carried on and completed the process of *digestion*, the first step towards *assimilating* the alimentary matter with the nature of the blood itself. The next and finishing part of the work of *assimilation* is effected through the operations of *circulation* and *respiration*. The blood in this way being continually fed, would soon fill its vessels to repletion, occasion an overflow in the

body, and thus be productive of a great deal of harm, were there not a consumption for it, as well as flood-gates or *excretories* to carry off its redundant or useless parts. By the consumption of the blood is meant, the use that is made of its substantive ingredients in the renovation or repair of parts worn out and in a state of decay. The process is called *nutrition*. As the component particles of organs lose their vigour or serviceability from constant use, so they become removed by absorbent vessels, and fresh matter is deposited in their place by the *arteries*, which are the *nutrient vessels*: in this manner a continual change of material is kept up, so complete and universal, that the body which an animal possesses at one period is really not the identical body he had some time antecedent to that, or the same he will possess at some future period. The growth of the body in youth and its decline in old age are both owing to this curious process of redintegration; and they admit of explanation on the presumption, that, during growth, the arteries deposit as equal to two, while the absorbents are acting as equal only to one; that in middle life these operations are equivalent; but that in old age the nutrient powers fail in activity, while the absorbent continue to act with little or no abatement of vigour.

THE BLOOD may be regarded as the medium through which these important changes are effectuated. It receives the fresh supplies of nutrient matter absorbed from the cavities of the bowels; it amalgamates this matter, or *animalizes* it, so as to render it fit for its destined purposes; it likewise receives the old and worn-out particles absorbed from different parts of the body, and conducts them along in its stream into the channels designed for their separation and expulsion.

THE EXCRETORIES of the system are the *intestines*, the *kidneys*, the *lungs*, and the *skin*. The extensive surface for secretion the intestines present, and the quantity of fluid in the form of *intestinal juices* they are known to separate from the blood, justly entitle them to the first place amongst the excretories or emunctories of the system; the kidneys are likewise (in horses particularly) active in extracting superfluous matter in the form of

urine; and the lungs and skin both tend to relieve the blood by the discharge of aqueous exhalations. In this manner all useless and redundant matters are got rid of; the blood being all the while the vehicle through which these various ends are accomplished.

## PLETHORA.

This is a word of Greek origin, literally signifying *fulness* or *repletion*: in which sense, as respects the quantity of blood naturally flowing in the body of an animal, I have prefixed it to this part of my subject. When we reflect on what the habits of the horse are in a state of nature, and come to contrast these with those imposed on him by art—when we consider, that in his native fields he lives almost exclusively on grass; that he ranges far and wide to cull his food; and that grass or herbage in itself consists of three parts in four of aqueous ingredients, a fact indeed well attested by the small quantity of water animals at pasture take—when, I repeat, we come to compare this with the dry, fermented, and more nutrient provender the animal receives in the stable; to compare the cool refreshing air of the field with the confined and heated atmosphere of his in-door habitation; and his progressive ramblings, interrupted only by an occasional freak or gambol, with the overstrained or insufficient or irregular exercise he gets in his artificial state; we shall be led to expect that certain changes or revolutions will happen in his system. One of the earliest and most certain effects of domestication is that now under our consideration, or else a condition leading or approaching thereto. Aliment of a better quality makes more chyle, and, perhaps, of a better quality too; more and richer chyle makes more and richer blood; which, unless there be a proportionate augmented expenditure in the system, goes on to create a sort of preternatural distention of the bloodvessels—in fine, the state we call *plethora*. Aliment, however, is not alone concerned in this result. The animal coming from poor to good keep, not only experiences a craving appetite for his new food, but has within himself an increased aptitude for the conversion of it into nutriment; so that more chyle is



actually made from the same quantity of the same aliment in his bowels than would be elaborated in the body of a horse accustomed to such food. The comfortable warmth of his new habitation, together with his state of undisturbed quietude, also probably favour the process of digestion. This, then, constitutes what we understand by *plethora from excess of nutrition*.

*Defective or inadequate secretion and excretion* will likewise conduce to a plethoric condition of the system. The secretions and excretions—the *intestinal juices, the urine, the pulmonary and perspiratory exhalations, the bile, &c.*—are all products from the blood; and so long as they, in the aggregate, are equivalent to the chylous and other fluids the blood receives, so long is the equilibrium of the circulating fluid preserved, and plethora is warded off: abridge or interrupt these emissions, however, and a similar effect is produced as would follow excess of nutrition. The secretions and excretions of the body have not only the effect, however, of giving vent to the redundancy of the circulating fluid—they likewise serve to depurate or purify it by ridding it of that whose retention would prove noxious or insalubrious. This operation of the animal economy, in conjunction with that of the nervous influence, has led to the ingenious pathological deduction framed by Dr. Copland—"That the interruption or obstruction of any secreting or eliminating function, if not compensated by the increased or modified action of some other organs, vitiates the blood more or less; and if such vitiation be not soon removed by the restoration of the function primarily affected, or by the increased exercise of an analogous function, more important changes are produced in the blood, unless the energies of life are sufficient to repel the cause of disturbance, to oppose the progress of change, and to excite actions of a salutary tendency\*."

**SUBJECTS OF PLETHORA.**—Young horses, on their first entry into stables, are the common subjects of the first description of plethora; old horses, or such as have become habituated to stable-regimen, of the latter. No prudent stable-keeper would feed his young or fresh horses high; even with soft meat, how-

\* Copland's Dictionary of Practical Medicine, article "*Blood*."

ever, such as mashes, &c., it is seldom that this state, or some near approach to it, is or can be avoided: such is the avidity of the young animal under these circumstances, and such the activity of his digestive functions. In those that are not treated with necessary caution, it is a result almost certain to happen. On the other hand, horses that are habitually fed on the stimulating astringent diet of the stable, and whose work is irregular and mostly insufficient, are subject to plethora from their bodies becoming costive, and from the want of those secretions being duly performed that require the stimulus of active exercise of body. Such is the case with a large class of horses that are kept for the sole purposes of pleasure, and those in particular that stand at livery.

FORMS OF PLETHORA.—The effects of plethora, if not the actual condition itself, appear often to be warded off or kept at bay by natural processes going on in the system. In the growing animal the blood is consumed so fast in *the operation of growth*, that plethora is but an infrequent occurrence compared with what it is in the adult; especially about the period that growth is quite or nearly completed—the period, in fact, at which, generally speaking, our young horses come to be domesticated. *Obesity* is likewise a mode adopted by nature to get rid of redundant nourishment in the system. That blood, over and above what is required for the purposes of reparation, secretion, and ordinary circulation, is often converted into fat, and in that form laid up in many parts of the body, as a sort of reserve in case it should be wanted. Young horses do not in general become fat until they have completed their growth; and then they do so, and most rapidly at grass, particularly in the spring and summer seasons. Old seasoned horses thrive best in the genial warmth of the stable. Although good feeding, little work, and quietude, are all conducive to obesity, yet a horse cannot brook being constantly tied up and stall-fed after the manner of a bullock. His habits of activity unfit him for a state of absolute rest: from want of exercise his legs become swollen, and his body falls into disease from excess of plethora, there not being the same meet and kindly disposition to make fat as is ma-

nifested in oxen and swine, and other edible beasts. During the many hours that horses in general stand in the stable, should a state of obesity or even thriving become desirable, it is of some importance that they should be subjected as little as possible to disturbances of any sort : grooms that have the care of hunters (and in particular of racers) are fully aware of this ; and therefore it is that between the hours of feeding and dressing they keep their stable-doors locked and the windows blinded ; the very light even being considered by them an unwelcome intruder. Another form or alternative of plethora consists in what is called

CONDITION ; which may be defined to be, that state or degree of perfection whereto experience has taught us we may bring an animal—a horse, a prize-fighter, a dog, a deer, &c.—so as to enable him to exert his physical powers with the greatest possible effect. *Nature* never presents us with an animal in what we call condition. The state is altogether an artificial one—a forced one ; at the same time it is one grounded upon that acknowledged principle in the animal economy, that *Nature is ever ready and desirous to meet the demands of Art*. Suffer a horse to be idle, to do little or no work, and feed him well during the time, and the redundant nourishment floating in his blood will be laid up in the form of fat : put the same animal to work, and that blood, which otherwise would have been turned into fat, will now be transformed into materials of strength, in order to enable him to accomplish the additional task day by day required of him. To take an unconditioned or unprepared horse and ride him in the chase, would, to a sportsman, appear neither more nor less than an act of insanity : the certain result would be, that the animal would, after a very short course, sink under his rider, exhausted ; and at the very time too that a practised hunter was going the same pace alongside of him without evincing any signs of distress, or even of uneasiness. Such is the nature of our animal functions, that not only is the art or knack of doing any thing acquired by practice, but strength and efficacy become added to the performance ; so that the act by repetition is not only better and more effectually performed, but can be persisted in and continued beyond all former comparison. I believe it is our entertaining

and intelligent sporting writer, Nimrod, that, somewhere in his "Letters," observes, "that a horse in condition is on the brink of disease:" a practical observation that perfectly coincides with my arrangement of this state under the *forms of plethora*; the evil consequences being, for a certain time, longer or shorter according to circumstances, successfully kept off by work and proper stable-management.

## CONGESTION.

Congestion means that state of an organ, or any individual part, which plethora denotes of the system altogether; congestion is, in fact, *local* plethora; at least this is the sense in which it appears to be most correctly used. It seems by no means a happily chosen term, though one much employed in modern medical phraseology: its literal signification leading one to suppose that there is some sort of *gathering* or *collection*, and consequent *stagnation* of fluid; whereas it is meant to imply that blood is *circulating* in greater abundance, or fuller streams, than at ordinary times—in other words, that condition of the blood-vessels of a part which precedes inflammation, or holds an intermediate station between that and health, without there being any definite boundaries or distinguishable lines of demarcation between either two of the three gradatory states. Prick, or burn, or otherwise stimulate any part of the body, and the consequence is pain, followed by sharpened sensibility, the continuance of which it is that rouses the vascular energies of the part into increased action, and thus produces inflammation, or something short of it, which we call congestion. In this case, congestion arises from a determination of blood to the part: it may likewise originate in some impediment or obstruction to the efflux of blood from it, as happens whenever tight bandages or ligatures are applied around any part. Congestion does not necessarily amount to disease; and yet it may exist to such a degree, or for such a length of time, as very materially to derange the functions of the part, and so prove the forerunner of organic mischief.

While a sort of universal assent is yielded to the occasional presence of plethora or repletion in the system at large, some have withheld their belief of its existence in any particular organ or part thereof; or, at least, have refused to acknowledge any intermediate *local* condition between health and inflammation, although they unhesitatingly admit that there may exist a *constitutional* one between health and fever, which, in fact, is nothing more than *general* inflammation. Even in *theory*, this position seems a very untenable one; and that it is so in practice, I shall now endeavour to prove, with the assistance of facts which themselves will admit of no gainsaying, whatever objections the deductions may be open to, which I may derive from them.

**KINDS.**—Congestion is of two kinds;—*sanguineous* and *serous*.

**SANGUINEOUS CONGESTION** is that which, in its developed form, is characterized by the same phenomena as inflammation itself from which it is only pretended to distinguish it in a general way, by there being no extravasation or effusion, no formation of new products or change of structure. **THE LUNGS**, probably, are the most frequent seat of this. A horse is galloped hard—pushed to the utmost of his powers; his nervous energy becomes highly excited; the heart is set a-beating with quadruple rapidity; blood is pumped into the lungs faster than they can discharge it, and the consequence is congestion, *active* in the first instance, but afterwards *oppressive* in its nature, from the vessels becoming distended beyond their tone, and tired and exhausted from previous over-exertion; which latter condition it is that some pathologists denote by the epithet, *passive*. The pulmonary vessels are gorged, and ultimately choaked, with the blood they contain. At first, the blood circulates through the lungs with augmented celerity; but the influx continues increasing at such a rapid rate, that over-distention at length prevails, and retards the current, and in the end obstructs the passages, and impedes it quite: a result that is somewhat hastened by the blood becoming, at the same time, viscid in its consistence. In such a case as this, the only remedy is instantaneous blood-

letting. I once had a horse lent me for trial as a hunter, that had been some weeks pampered for sale in a dealer's stable—of which, by the by, I was at the time unconscious—I had not followed the hounds (going at a rapid rate) above ten minutes before my horse fell, perfectly exhausted. I instantly opened his jugular, and freely let blood, until he experienced returned strength enough to rise again; by which time (as nearly as I could judge), he had lost from three to four gallons of blood.

THE BRAIN, also, is a part in which we have reason to be apprehensive of the effects of congestion. In stables in which horses are well fed and little worked, it happens every now and then that one dies suddenly in a fit of vertigo or staggers, without having manifested any signs whatever of previous indisposition; whose brain, when the head is opened, commonly exhibits every appearance of congestion. It was at one time the practice in the Ordnance service, at Woolwich, to turn horses that happened to be low in condition into marsh pastures to recruit their strength; and during the months of July and August in particular, it was very common to see several among them attacked quite suddenly with staggers, proceeding from an overflow of blood to the head, occasioned by the prone position of it, together with the heat of the weather, and general plethoric condition of the system. The *blood* in sheep, a disorder to which the French give the name of *màladie de sang*, is the effect of plethora and cerebral congestion, induced by luxuriant pasture and other causes similar to the above. All on a sudden, the sheep—up to that moment in apparent health—stands aghast in the midst of the others, staggers, and falls prostrate: his breathing becomes laborious; he foams at the mouth, and gasps with it wide open; he rattles in his throat; blood issues from his nose, and even from his anus: he becomes convulsed and dies\*.

EVEN THE HEART, the pump that forces the blood over the body, occasionally becomes the seat of congestion, from which may arise most serious consequences. Any impediment or obstruction proximate to the source of the circulation, such as dis-

\* Dict. de Médecine Vétérinaire.

eased lungs, pressure on the large bloodvessels, disordered circulation in the brain, or even repulsion of the blood from the outward parts of the body; any thing, in fact, that operates towards preternaturally distending the heart with blood, will, in the course of time, tend to its dilatation and enlargement, that state of the organ which we designate by the term *hypertrophy*\*.

THE LIVER is likewise very subject to congestion. The nature of its structure renders it especially so. The large venous vessels entering into its composition; the intricacy and minuteness with which they ramify; together with their circumlocutory distance from the heart; are all circumstances favouring such a condition. In old horses that are very fat, and whose work is but occasional or trifling, it is not a very uncommon accident to have the gland burst from congestion; in which case it displays a mass of seemingly nothing else but congealed black blood.

THE SPLEEN, now and then, acquires an enormous bulk from the effects of long-continued congestion. It ordinarily weighs little more than three pounds: I have seen it so much congested and enlarged as to weigh upwards of fourteen pounds.

CONGESTION OF THE MUCOUS MEMBRANES, and especially those lining the air and alimentary passages, are frequent; at the same time, they appear to be of a very fugitive nature. In these and other membranous structures, the pathological line to be drawn between congestion and inflammation is so fine and fluctuating, that it is hardly possible to speak fully on one subject without infringing largely on the other; on which account I shall defer the present inquiry until I come to speak on inflammation.

A remarkable instance of the effects of congestion is furnished by the case of common frush. Every groom or farrier knows how hazardous it is to arrest this issue when it has been of long continuance—that, in fact, its sudden suppression is apt to be followed by heat of hoof and lameness; a result owing to congestion taking place in the foot.

\* Two interesting cases of this disorder will be found related by Mr. Pritchard, in the *Veterinarian*, vol. vi, pp. 24 and 80.

NEWLY-FORMED STRUCTURES and parts that have been the seat of prior inflammatory attacks, are, in an especial manner, disposed to paroxysms of congestion. The bronchial membranes of horses habitually subject to chronic cough, or that have roaring, or broken wind, shew this during the changes from dryness to moisture, or the reverse, in the atmosphere. In some horses, so irritable is the mucous membrane of the bowels, that exposure to cold will produce an attack of diarrhœa.

SEROUS CONGESTION.—In those parts of the body in which the seriferous order of bloodvessels terminate, many of them in exhalents, and through these terminations exhale a sero-albuminous vapour for the purposes of moisture and lubrication, it frequently happens that accumulations of this serous fluid take place, imperceptibly to us, as well as unconsciously—at least, without producing any inconvenience—to the animal himself, and without any previous or existent signs of inflammation: such are called *serous congestions*. These cases can hardly be denominated inflammatory, seeing that they occur without the quadruple combination of signs—*heat, redness, swelling, and pain*—which we all consider indispensably necessary to the existence of inflammation: indeed, often the only one among them that we can recognize is swelling, and that manifestly owing to the presence of the collected fluid. It is by no means uncommon to meet with a circumscribed tumour in some part of the body where the skin is loose; which, on being opened, proves to be a collection of serous fluid in the sub-cutaneous cellular tissue, and which has come on without any sort of discoverable cause or antecedent inflammatory action whatever.

In the internal cavities of the body, likewise, we occasionally find accumulations of serous fluid, without any accompanying signs or traces of inflammation: in the cavity of the pericardium; in the ventricles of the brain; and, also, within the thorax and abdomen. In this respect there appears to be remarkable sympathy evinced between these several parts: should a horse die from water in the chest, we find very often water collected in his belly, and likewise within his brain; in which two



last-mentioned cavities the effusion may be regarded as the result of serous congestion.

SANGUINEOUS AND SEROUS CONGESTION may exist in combination. When a horse's legs fill from standing in the stable (which they do from serous infiltration into the *areolæ* or cells of the cellular membrane), the tumour is not the result of inflammation, but of sanguineous and serous congestion, in consequence of standing long without exercise: blood accumulates in these parts remote from the heart; the seriferous vessels, especially, suffer from distention, and the easiest mode in which they can relieve themselves is to suffer the fluid to exude through their exhalent terminations. A disposition of parts like unto this may pervade the whole limb, as well as any cavity, organ, or individual part of the body, and thus give rise to that condition of it which we designate by the general name of *dropsy*.

WINDGALLS of all denominations may be regarded rather as the effect of congestion than of any inflammatory disorder. They form, generally speaking, without heat, and without causing lameness: they are, in fact, *hypertrophic bursæ mucosæ*, originating in congestion and augmented secretion, induced by the frequent or undue exertion of parts, and are not by any one of the present day, I believe, considered unsoundness—simply *indications of work*.

This superficial sketch will, probably, be deemed sufficient to shew that the subject of *congestion* is deserving of a place in veterinary pathology; that there really does exist such a state, and that it is one well worthy the attention of those by whom it may hitherto have passed unheeded or disregarded, or even altogether denied. I was once, myself, in the class of unbelievers; but I must confess that my opposition has been borne down by the force of practical testimony, and its undeniable application to this new and fast-spreading doctrine. Those who wish for more pathological exposition than the limits, or, indeed, design of this work will admit of, may consult with the greatest advantage M. Andral's writings on the subject.

## ANÆMIA.

We believe that the blood may exist in the animal body to a greater amount than is required for its economy, or is altogether compatible with its health; in like manner we are of opinion that the same fluid may, under some particular circumstances, exist in a less aggregate quantity than is natural or salutary: both these are points, however, on which we dare not insist with the same confidence that we do in regard to the nutritive qualities of the blood—to what is vulgarly called its *richness* and *poorness*. As *plethora* implies redundancy, so the term *anæmia* signifies deficiency of blood—a state the reverse of plethora: the veritable pathology, however, of these two conditions probably is, that in the one the blood is redundant in nutritive properties or ingredients; in the other, deficient in them. In a general way, most domesticated animals consume more food than is required, or is converted into nutriment; a circumstance that, considered in connexion with the customary mode in which horses at the present day are treated, renders a case of anæmia proceeding from lack of aliment of somewhat rare occurrence: such a condition, however, may and does occasionally proceed from torpid or defective action in the digestive, or absorbent, or assimilating powers of the system. I have witnessed a case of contracted *cardia*\* of the stomach, in which the aperture was diminished to that degree, that the animal was reduced in flesh to the utmost extremity from inanition, and would have died from want of nutrition, had not an act of humanity put a premature end to his sufferings. Enlarged and scirrhus mesenteric glands arrest the absorption of chyle (at the same time that they are unfitted for the elaboration or conversion of that fluid), and thus produce similar effects on the system. *Diarrhæa*, or continued purging, will be attended with anæmia, by carrying off the alimentary matters before time has been allowed for the completion of digestion.

ANÆMIA MAY GIVE RISE TO DISEASE, either from the in-

\* The *cardia* is the orifice through which the food enters the stomach. The case is reported in the *Veterinarian*, vol. i, p. 88.

sufficiency of the quantity of the blood for the purposes of the animal economy, or from the thinness or poorness of its quality. It is too prevailing a practice in the regimen of the stable to keep horses "short of water," under the impression that much fluid is injurious; a notion that probably originated in the very proper custom of giving water very sparingly at the time the animal is required to exert himself: hunters and racers are not allowed any, or but very little indeed, on the morning of the day they are to go to work. This, however, furnishes no good reason why the animal is to be debarred from quenching his thirst after his work is performed. The enforcement of the contrary opinion to this gave rise, in the course of my father's practice, to the following singular case\*, which I shall relate in his own words.

\* "About the beginning of October, 1810, I was requested to visit a black gelding, the property of Mr. Banks, of Deptford. This gentleman, who had possessed the horse but a few weeks, informed me that the animal had *knocked up* in two or three journeys, and that of late he had refused his food, though he appeared to have a vehement desire for water, which, I understood, had been allowed but in sparing quantities. The animal shewed some general signs of ill health: his coat was long, rough, and staring; his belly tucked up; and he perspired freely from moderate exercise. His principal malady, however, seemed to be of a pneumonic nature; to relieve which, the common remedies, such as bleeding, blisters, &c., were resorted to: at the same time, I recommended his having water-gruel to drink instead of plain water. On my next visit, the servant complained to me of the horse's extreme thirst, which he said was such 'that his whole time was taken up in making water-gruel;' and his master (probably at his instigation) wished me to take the animal under my immediate care (to Shooter's Hill), which I accordingly did on the 3d of November, by placing him at livery at the inn opposite my house. In the course of a day or two, the ostler discovered his appetite for drink, and represented to me that he consumed 'all the gruel he could make for him.' At this time, I must acknowledge my hopes of recovering my patient (from a malady of the nature of which I was confessedly ignorant) were declining; when, on visiting him as usual on the 5th, and finding that his inordinate desire for liquids had not, by very large potations of gruel been appeased, I resolved to ascertain, whether it was the gruel after which he craved, or whether he had really a preternatural thirst. Now, it was about eight o'clock, A.M., and he had already taken his usual allowance of gruel, when I ordered the man to fetch him a pail of water; this he ravenously drank, another as greedily, a

I have heard Professor Coleman observe, in his lectures, that mange is often the result of poverty of condition in horses; an observation my own experience has tended to confirm. During the campaign in the Peninsula, I found mange very prevalent among the mules employed in the service, and especially such as were much reduced from want of better keep. And among our own horses, and even such as are well kept, mange is frequently seen combined with an unthriving state of body.

## VITIATION OF THE SYSTEM.

We have seen that *plethora*, or richness of blood, is a condition premonitory of disease; we have found that even *anæmia*,

third was swallowed with equal avidity, a fourth quickly disappeared, and a fifth followed. About a quarter before one o'clock I repeated my visit; and having found my patient by no means uneasy from the twenty gallons of water (the pail having been measured) he had already ingurgitated, I was willing to see if he had any inclination to renew his potations. Accordingly, another pail of water was offered to him; having drank which, apparently with undiminished avidity, he looked round in my face with eagerness for a second; this was followed by a third, a fourth, and a fifth: in fact, between eight A.M. and one P.M. he swallowed the prodigious quantity of thirty-eight gallons and one quart! Having, at length, quenched a thirst which I, at one time, almost began to despair of doing, no more water was given to him during that day, and medicine was altogether discontinued. This enormous ingurgitation, as was anticipated, was speedily followed by profuse discharges of urine; and in this way the bulk of the fluid appeared to have been disposed of; for no diarrhoea ensued, nor was there any consequent sensible perspiration.

"From this time I may date the recovery of my patient. His appetite, before defective and declining, improved daily; his desire for water, though still remarkable, was not to be compared to what it had been; for, from the 5th to the 13th of November he drank, on an average, not more than eighteen gallons *per diem*; his coat, before rough and staring, grew fine and sleek; in fine, he became rapidly convalescent, recovered his condition and spirits, and was, in a few weeks, sent home and put to work again.

"After an elapse of three weeks or a month, I met with him again, in harness; in the course of which interval, he had so much improved in condition and appearance altogether, that I could hardly recognize him as the same ill-conditioned, debilitated, hopeless animal I had been treating so little time ago. Mr. Banks told me that he was still 'addicted to tipping,' but not to any considerable amount."—*Vide Lectures*, vol. ii, p. 530.

or poverty of blood, may give rise to its production : we are now about to learn that the system may become vitiated or corrupted, and disease in that manner be engendered in it. There are various ways in which noxious matters may obtain introduction into the system, some of which are palpable and open to demonstration ; while others elude our observation so far as to become apparent only through their effects. The channels through which they may gain admission are, the alimentary canal, the air-passages, and the skin.

THROUGH THE ALIMENTARY CANAL.—An animal may eat that which is unwholesome, mingled with his food, or he may drink water that is insalubrious ; or he may, under some casual or incidental circumstances, lick in and swallow, mixed with his saliva, matter of a contaminating or morbid nature : in either of which ways he may lay the foundation of disease in his system. We know that within the alimentary canal is elaborated the *chyle* ; that the chyle feeds the blood ; and that the blood nourishes and repairs every part of the body : consequently it is natural to suppose that any hurtful or morbid matters existing within that canal, will contaminate the chyle ; the chyle, the blood ; and the blood, the system. In this manner do medicines, given internally, affect the constitution : there are many whose presence, independently of their effects, can, a very short time after their administration, be satisfactorily attested in the blood. Madder has been mixed with the food of hogs ; and some weeks afterwards, on their being killed, has been found tincturing with its scarlet dye even the inmost parts of the animal's bones. As pastures are known to have their degrees of nutritiveness ; so do they possess their salubrious and insalubrious properties, arising not only from any baneful plants that may be growing among the esculent herbage, but even from the quality of the grass itself. Although horses are nice in their feed, culling their pasture where the grass is sweetest ; yet are they, when turned out, inclined to prowl about and be mischievous, nibbling and tasting every shrub or tree whose branches happen to hang within their reach. The yew-tree, among others, they are said to be fond of ; and there is a notion abroad that such is poisonous to them : I once, however, gave (made up into balls) twelve ounces of the

fresh cuttings of yew, without producing any perceptible effect whatever on the horse. Oats or hay of bad quality, musty, or unduly fermented, might, and certainly would if persisted in, prove deleterious: it is rare, however, in the present improved state of agriculture, that we have to complain of any thing of this sort. Foxy oats and mow-burnt hay call occasionally for our interference: and we find that their use is apt to be attended with an increased flow of urine, in some instances to such a degree, that the animal rapidly declines in condition, and loses his strength. The following account of a disorder that broke out among a large stud of horses in France, affords an apt illustration of the point I am at present endeavouring to substantiate, viz., that disease may be introduced into the system through unwholesome or deleterious provender\*.

\* "A disease, bearing the character of an enzootic, shewed itself towards the middle of last year among the horses of one of the largest proprietors on the Somme. M. Renault was sent for. He found the disease had prevailed three months, and destroyed forty-nine horses, leaving fifteen then ill. It was a disorder of very obscure nature. No particular organ seemed to suffer, nor, indeed, was found in the least altered after death. Many of the patients ate well up to the last moment. Of the fifteen yet living, M. Renault destroyed eight (of whom there was no hope of recovery), for the purpose of examination; and the result convinced him that the disease was in the blood. For, whether it were taken from the dead or the living animals, the fluid covered his hands without reddening them, and either did not coagulate, or formed a mass of a dirty grey colour, and contained a very small proportion of fibrine. Indeed, so feeble was the force of cohesion between the organic elements of the blood, that, even during the life of the animal, the fibrous filaments separated from the liquid whenever it was agitated. If we add to these characters, the paleness and flaccidity of all the organs which, like the red muscles, are essentially fibrous; the absence of all inflammation, either acute or chronic, in any organ; and the rapidity with which the carcasses became putrefied; it cannot be doubted that the disorder existed in the blood—characterized by the small proportion of fibrine and colouring matter, as well as by the ready separation of its elements. This opinion also receives corroboration from the apparent causes of the malady. For nearly six months the horses had been fed on fodder that had stood in the stack exposed to the rains of the preceding year, and that had in consequence become mouldy and insupportably offensive to the smell. The oats also had been of an inferior quality. Added to which, the

THE WATER the animal drinks may prove the vehicle for the introduction of disease. It may contain some noxious impregnation, mineral, saline, or of other nature; or, it may, from being long stagnant, have become putrescent. Water forms an excellent vehicle for the exhibition of such medicinal substances as are almost or quite tasteless and inodorous. I have been in the habit of administering arsenic and mercury in this manner. It is in the recollection of us all, that the race-horses at Newmarket were poisoned by the treacherous introduction of arsenic into their water-troughs.

MORBID OR CONTAGIOUS MATTER may likewise gain introduction into the system through the alimentary canal, though we have not much apparent reason to believe such is often the case; nor are we by any means well advised in regard to its probable consequences when such does, or is supposed to occur. A horse running at the nose from glanders will drop the discharge into the manger, and smear it upon the rack and other parts of the stable within reach of his head, from which situations the matter, become probably dry and incrustated, may subsequently be licked off by some other horse occupying the same stable: all this may and no doubt does occasionally happen; considering, however, how much alive horse-owners now-a-days are to the danger of glanders, together with other circumstances of improvement, it is by no means, I suspect, a common or even very likely occurrence.

THROUGH THE AIR-PASSAGES it is that disease finds the most ready inroad into the constitution of the horse. Considering how accessible, and at the same time how susceptible these parts are, and how much they in particular suffer by the change from a state of nature to one of domestication, it becomes no matter of surprise to us that they should prove so frail a medium. The air an animal breathes is a more common vehicle of the seeds of disease than the food he consumes: miasms, *influenzæ*, animal and malignant effluviæ, all by turns pervade the atmo-

horses had been much over-worked. M. Renault made entire changes both in the provender and work; and thus put a stop to the further progress of the disorder."—*Veterinarian*, vol. v, p. 51.

sphere, and exert their several influences on the delicate and sensitive membrane lining the air-passages; through it tainting the system, either by absorption or by direct effect on the blood itself in its course through the lungs. The natural *stimulus* of this membrane is *pure* air—at least air free from any irritating property; whereas, the atmosphere of the stable is rarely free from animal exhalations, and but too often imbued with animal poison. The subject of *atmospheric influences*, in-doors as well as out of doors, is one on which we greatly lack information; and he will be eminently serving the cause of veterinary science who may successfully embark in its investigation.

THROUGH THE SKIN, densely clothed as almost every part is with hair, disease finds a difficult entry into the system. We know, however, from experience that many medicaments rubbed into parts whose skin is thin and almost hairless,—the insides of the thighs, sheath, muzzle, &c.,—will take effect on the constitution; we therefore cannot doubt the possibility of disease being introduced in a similar manner, though we believe instances of it to be rare where there has been no abrasion of surface. For, so long as the cuticle remains entire, there is an evident indisposition in the absorbent pores of the skin to imbibe any morbid or noxious matters: destroy, however, the cuticular covering, and the disinclination ceases to exist. Even upon the bare membrane of the nose I have frequently applied glanderous matter without any ill consequence; although its effect has proved certain in any part of the body by inoculation. Such is the case, likewise, with the virus of *rabies*: so long as the integrity of the skin remains unbroken, there is little reason to apprehend any ill consequences, even though the *saliva* may have been resting upon its surface.



## DISEASE.

WHILST surgeons are engaged in administering healthsome aid to their fellow-men, veterinary surgeons are employed in the more humble, but, perhaps, not less publicly useful and laudable occupation of contributing to the welfare of the brute or animal part of the creation. He that would shut his breast to the wants and sufferings of the creatures around him—creatures so able to serve and willing to please him—is unworthy the name of *man*. To our philanthropy there may be gradations, and even qualifications; but it can hardly be said to have limits—

“ Friend, parent, neighbour, first it will embrace,  
His country next, and next all human race;  
Wide and more wide, the o’erflowings of the mind  
Take ev’ry creature in of ev’ry kind.”

But half a century ago, the practice of veterinary medicine was in the hands of men, not only of the lowest grades of society, but, from want of education and capacity, every way as unfitted for the office as the barbers of old were to practise human surgery. And yet, when persons will place their own lives in such jeopardy, as we behold numbers every day doing in their dealings with empirics and pretenders of the most audacious and impudent description, we have no right to feel surprise at the hold that farriers still maintain of our art; especially in the country, where the life of a horse is less worth paying for than in large towns. As, however, we ourselves become more able in our art, and our abilities become known among the proprietors of horses, we shall find veterinary practice rolling into those channels that have undergone the necessary preparation for it. People will find it their *interest* to come to us; and whatever may be urged on the score of *other* considerations, perhaps this is the one, after all, that will sway the most with them.

THE IMMEDIATE OBJECT of all medical science is *disease*.

Were the health of animals insusceptible of change or interruption, there would be no occasion for such a study. The animal we most regard in this investigation is the *horse*—the most noble, the most useful, the most valuable of all dumb creatures—and, in proportion to the value that is set on him, in like and uniform ratio will our art rise in public estimation. When deprived of his services from sickness or lameness, we most feel the worth of them, whether they be devoted to the purposes of pleasure or employed to our profit; and our desire to have our useful and faithful servant restored, is, with many of us, one exceeded only by our anxiety to raise our own fellow-beings from the bed of affliction.

THE GROUNDWORK OF THE SCIENCE of animal, or (as we technically style it) *veterinary* medicine, consists in a knowledge of *zoology*, or the natural history and habits of the animal; of *anatomy*, or the construction of the various parts of his body; of *physiology*, or the unfolding of the laws of living actions and phenomena; and of so much insight into *chemistry* and *botany*, as will enable us to understand the nature and composition of the several mineral and vegetable substances we employ for the cure of his diseases.

DERIVATION AND MEANING OF DISEASE.—That which, in common parley, we are in the habit of calling by the names of disorder, distemper, malady, sickness, lameness, &c., in medical phraseology is designated *disease*. The word is a compound of *dis* and *ease*, and, literally, signifies nothing more than the privation or absence of ease; the same as *dis-order* implies a breach or cessation of order. Simple and plain as this analysis of the term may appear to be, yet, to give what the schools call a *definition* of it, has proved, as I have before intimated, a perplexing task even to medical philosophers themselves. To say disease consists in the absence of health, is to offer a solution of no value, unless accompanied with one of what health itself consists in. So far as our practice is concerned, in their more developed states, they, neither of them, require verbal descriptions; and, in their dubious forms, the safest guide to the recognition

of either is oftenest to be found in a familiar acquaintance with the opposite condition.

**DIVISION.**—In animals, disease presents itself to us in two general forms,—either as *sickness* or *lameness*: the former being that state which is contrasted with the general or bodily health; the latter, that which is opposed to soundness. Disease, however, may exist in a form without the pale of either of these divisions: it may be confined to some one individual part, and not be productive either of what we understand by sickness, or of lameness.

**SEAT.**—When a sick or lame horse is brought to us, our first inquiry is naturally directed to the discovery of the *seat* or situation of the ailment. This is an inquiry embracing two considerations: first, we must ascertain the member or organ diseased; and, secondly, in what essential part or texture of that member or organ the disease resides. This proves an investigation too often embarrassing even to the surgeon, whose patient, gifted with speech, can in plain and pointed language describe the nature and intensity of his pains; and direct attention to their source: how much more arduous, then, must the undertaking be in the case of the speechless animal! By dumb signs alone can he make known his complaints; and on our observations of these, and the correctness or justness of the inferences we may deduce from them, must depend our sole insight into the seat and source of the malady.

**NATURE.**—Having formed our opinion on its seat, we proceed to the investigation of the *nature* of the disease. This is a subject veiled in more obscurity still, and for that reason has furnished matter of speculation for many a by-gone, ingenious, and, I may add, beautiful theory. The powers that perform those actions whose co-operation and continuance constitute all that we profess to know of life, are the same that are concerned in the production of disease: so long as their actions or functions are executed with their accustomed regularity, we say the animal is in health; but whenever any manifest irregularity or disturbance happens, we say the animal is out of health, or that

disease is present. These same organic powers build the body up; are continually renewing and repairing every part; and furnish, besides, all the secretions, viz., the urine, the bile, the perspiration, the semen, &c. How they effect all this is to us at once a mystery and a miracle. Since, therefore, we have no clue to these several healthy vital actions, or, at the best, entertain but very imperfect notions of the manner in which they are severally carried on, we must necessarily be equally imperfectly informed of the modes in which the diseased ones proceed. We must be content, for the present, with observing the operations of disease as they present themselves to our notice; and with noting the products and consequences to which they commonly give rise, in order that we may be beforehand advised of the general tendency of the former, and regulate our remedial measures accordingly.

#### HUMORAL PATHOLOGY.

The knowledge possessed by the ancients concerning the structure and economy of an animal body was of that imperfect description that led them to suppose, when they beheld any unhealthy or morbid matters produced under the operation of disease, that they were the effect of corruption or vitiation of the fluids, by them called the *humours* of the body: a doctrine to which the moderns have applied the appellation of the *humoral pathology*. Above all, the blood was viewed as an extensive source of mischief: it was considered to be either too thick or too thin; or else to be in a state of fermentation, or coction, or even putrefaction. These were the tenets of medical philosophers at the time our earlier works on farriery were written; whence it comes that the humoral pathology has met with such staunch advocates in the persons of grooms and farriers, *et hoc omne genus*; whose descendants, even of the present day, discourse with peculiar sagacity on the subject of “humours,” holding a faith in their ebbing and flowing, and breeding, and requiring expulsion, quite as strong as could possibly have possessed the minds of the patriarchs of medicine themselves. Pro-

gressive improvements in anatomy and physiology diverted the attention of medical men to the *solids*—the parts principally involved in those improvements; which, in their turn, so completely engrossed all interest, that the fluids lost their ancient popularity, and became nearly or quite discarded from pathology. Singular as it may appear, with the lights that have of later years broken in upon us, the influence of the fluids—at least of the blood—in disease, is once more come to be acknowledged, nay, to be admitted in a degree equal to, some say even superior to, that of the solids themselves. After all, we shall probably find most truth between the two extremes.

### SOLIDISM,

As that doctrine is called which attributes all to the *solids*, itself comprises two theories, each of which has its supporters. While both parties admit that disease consists in alterations both of function and structure, one contends that the functional disorder is the primary and leading cause of the phenomena that follow; while the other asserts that, were the nature of disease thoroughly understood, we should probably be able to refer the altered function to some correspondent change of structure, in which case the former would constitute but a sign or symptom of the latter. This is a question far too subtle for me to think of discussing: my object was but to state its existence; that done, I shall dismiss it in the language of the poet—

“Felix qui potuit rerum cognoscere causas;”

and conclude this part of my subject with observing, that as our views of the nature of disease can be drawn but from the result of observations during life and after death, to these combined evidences must all our attentions be directed.

A VERY LARGE MAJORITY OF DISEASES CONSIST IN INFLAMMATION.—This, at least, may be laid down as an axiom, and especially in *veterinary* medicine. In what then does inflammation consist? For, unless we can solve this question, our assertion, after all, will amount to little more than shifting the saddle from one horse's back upon that of another. This will

form the subject of subsequent inquiry. In the mean time I may observe, that there are diseases that are *nervous*, others that are *spasmodic* in their nature; and that, although both have existences independent of inflammation, even they, perhaps, are oftener either directly or indirectly connected with it. It is these undeniable practical facts that make the study and understanding of inflammation of so much importance to us.

THE PRACTICAL STUDY OF DISEASE is to be conducted in the sick stable: there, and there alone, can the "book of nature" be consulted. We must bear in mind that our patients cannot, themselves, inform us of what has passed antecedently to our arrival, or of any thing that may have happened during our absence: for all this information we have to rely upon the accounts of a man who may be intelligent and veracious, or who may have some interest in acting otherwise: consequently it becomes imperative upon us, if we would seek for facts to direct our judgment, to spend as much time as we can in our sufferer's domicile, and, while there, to institute every inquiry calculated to throw ever so little light on the case. The late Mr. Abernethy, who felt how much he owed of his high professional reputation to his practical industry and perseverance, tells us, that "the best mode of obtaining and extending medical and surgical knowledge is, in my (his) opinion, to pay strict attention to diseases; which qualifies us to note even the slightest shades of difference that distinguish them from each other. Such discrimination leads us to form some regular arrangement of them, which, even if it be not correct, may ultimately enable us to discover their natural series and order\*." In fact,

CLINICAL OBSERVATION, as this practical study is called, cannot be too much insisted on. Through it we learn the changes that take place during life in the state of the part affected, as well as in the condition of its functions; and the account, thus begun, is after death completed by an examination into the *internal* changes the diseased part may have undergone. In this manner we obtain a knowledge, 1st, of the *signs* or circumstances by which the presence of the disease is indicated;

\* Abernethy's Surgical Observations.

2dly, we inquire into its *history*; 3dly, into its *causes*; 4thly, we watch its *course* and *duration*; and, 5thly, we note its *termination*.

### SIGNS OF DISEASE.

THE SIGNS OR SYMPTOMS of a disease are the circumstances denoting its existence. We collect them from observation, and experience renders them familiar to us, until at length, through their agency, we acquire a tact of at once pronouncing this or that organ to be the seat of disease, and the disease itself to be of this or that nature. When we come to give what is called a *ratio symptomatum*, we shall find them all referrible to two general heads; to alterations either in the structure of the part affected, or in its function. In a part whose situation in the body is superficial, and, consequently, that comes immediately under our observation, all physical changes of an external kind become readily noted; such as swelling or shrinking of the part, hardness or softness, heat or coldness, change of colour, &c. But when it is an inward part that is ailing—one out of the reach of inspection, and even manual examination—we can no longer avail ourselves of this class of symptoms, and therefore we have recourse to those that arise out of the deranged function of the part.

THE EARLIEST SYMPTOMS of disease in the horse, are, in a general way, loathing of his food; or (to express myself in the language of the stable) the animal is “off his feed:” he ate in the course of the past night a portion of his hay, but the whole of his corn remained in the manger in the morning, untouched by him. Being called to the animal, with a complaint that he is “off his feed,” we inquire into his spirits, and are told that he has lost much of his usual liveliness and gaiety; that he hangs heavy in hand at his work or exercise; and is averse to move at any sort of pace, unless urged to it by whip or spur. Or we may, perhaps, even perceive this depression ourselves, by the dependance of his head, his drooping eye, &c. We feel his pulse, and find that beating with increased celerity—fifty or sixty strokes in a minute. We perceive that the surface of the body

has lost its natural smoothness, gloss, and genial warmth—the coat stares; and the ears, and legs in particular, feel chilled. With such symptoms as these we may rest assured that disease is approaching; but of what precise nature, though the man of experience may often hazard a speculation, it is not commonly in our power at this stage to determine with absolute certainty. It becomes our duty, however, to act, though it be but on the speculative, and to do so without delay to the best of our knowledge; as by so doing we may occasionally arrest, or else protract or mitigate, the attack of some perilous malady; thus evincing the force of the old maxim—

“Venienti occurrere morbo.”

THE STATE OF THE PULSE is highly important in almost all diseases. Naturally, it beats about forty times in a minute. A few beats either below or above this standard need not be noticed, as it will vary even in health in different horses: but when it comes to ascend to fifty, and to mount beyond this, it furnishes reason to suspect that the operations of the body are in some way or other disturbed. As regards its frequency, and in reference to the natural standard of forty, the pulse may be *slow*, or it may be *quick*. I have found the pulse myself as low as twenty-four: I have heard Mr. Sewell say, he has met with it not more than fourteen. As regards the force with which it beats, the pulse may be *hard* or *soft*: as regards its size or diameter, the pulse may be *full*, or it may be *small*, or *thready*, or *wiry*. An *oppressed* pulse is a state of preternatural or extraordinary fulness. The pulse is said to *intermit* when it beats with the regular occurrence of intervals longer than the intervening ones: when short and long intervals occur without any regularity, the pulse is said to be *irregular*.

THE STATE OF THE RESPIRATION—the *heaving* or *panting* of the flanks—is, also, very important to be noted in disease. There are but few diseases in which the respiration remains undisturbed; in some, and those of very frequent occurrence, it forms a primary and leading symptom. When we find the flanks heaving quick and hurriedly—*panting*, as it is called—we may



conclude such is more the effect of pain than of organic disease : in fact, it is one of the most significant and affecting modes the animal possesses of expressing pain. When this is the case, we shall find the heavings of the flanks outdoing, in celerity, the beatings of the pulse ; though naturally, and indeed generally in disease, the latter surpass the former.

PAIN is a symptom of most diseases ; one that originates in disturbance or impression of the nervous textures distributed over the body. Speechless as the horse is, yet, as he is well known to possess many ways of making his wants understood in health, so in numerous instances under disease does he (to those acquainted with his ways) point out the seat, the kind, and the intensity of his sufferings, with an instinctive sagacity hardly to be credited by persons who are strangers to his manners and habits. The drooping, dolorous, desponding eye in several chronic disorders ; the wistful looking back at the flank in pneumonia ; the fearful and even supernatural vividness of the eye in choleric, just as the approach of another paroxysm is felt ; together with the wild phrenzied roll of it in times of violent pain and delirium ; are so many examples of morbid physiognomy not to be misinterpreted by the practitioner of experience. Thus, we may apply to horses what Sir Thomas Brown has said of men :—" In long observation we may acquire a physiognomical intuitive knowledge ; judge of the interiors by the outside ; and raise conjectures at first sight\*."

ONE DIVISION OF SYMPTOMS is into *primary* and *secondary* : the former being those that arise in the first instance, and owe their existence immediately to the part or organ diseased ; the latter, such as owe their production to the consent or sympathy of other parts or organs to take on disordered action at the same time. Almost all diseases present us with these two sets of symptoms : so prone is the system to sympathize when any thing happens amiss with any of its component organs.

ANOTHER DIVISION OF SYMPTOMS is into *local* and *general*. It is one, however, that differs but unimportantly from the former division : local symptoms being such as belong to

\* Brown's Christian Morals.

the part primarily or principally disordered ; general, such as are indicative of the general disturbance of the system.

**PATHOGNOMONIC SYMPTOMS** are such as point directly and at once, without any kind of doubt or uncertainty, to the seat and nature of the disease.

**DIAGNOSTIC SYMPTOMS** are those that serve to distinguish one disease from another that may resemble it.

### HISTORY AND CAUSES OF DISEASE.

**THE HISTORY OF A DISEASE** comprehends whatever may tend to throw a light on its origin or production. In veterinary practice, the history forms a part of our inquiry of much importance. We have two objects in seeking for it. We have to frame by it our theory of the disease present ; and we have to regulate our remedial measures by what has or has not been done before we were called in : indeed, it oftentimes dispels a cloud of mystery ; and frequently becomes absolutely and indispensably necessary towards the future treatment of the case. One instance will suffice to illustrate this. We are called to a case of *cholic*, commonly called “the gripes.” We learn, on inquiry, that the horse is a crib-biter. In place of going the troublesome and unavailing round of the ordinary antispasmodic treatment, we direct that the animal be immediately taken out and briskly trotted for half an hour ; by which exertion the air distending his bowels is forced out *per anum*, and he returns to his stable cured of his disorder.

**THE CAUSES OF DISEASE** comprehend a variety of circumstances tending either directly or indirectly to its production. When we come to consider the number and nature of the functions continually going on within an animal body ; the delicacy of the structures performing some of the most important of these functions ; and take into our account the changes, and chances, and abuses, to which the animal is every day exposed ; we can only wonder, while morbid causes appear so numerous, that he is not much oftener the subject of disease than we find him to be. In a state of domestication, the horse is surrounded on all sides

by causes of disease: he harbours them within his own body; they are inflicted on him by man. Numerous as they are, however, these causes admit of classification under two general heads:—they are either *predisposing* or *exciting*. Some add a third class, and call them *proximate*.

PREDISPOSING CAUSES are such as *predispose* or prepare the body, or any part thereof, or render it susceptible, to take disease. In their nature, they may either be *innate* or *acquired*: i. e. an animal may be born with a predisposition in his system to some particular diseases; or he may be so placed or circumstanced as to acquire predispositions of various kinds after he has come into the world. A horse may inherit from his dam or sire a predisposition to *ophthalmia*, to *roaring*, and to various other diseases; or he may manifest, in the narrow make of his chest, an inclination to pulmonary disorders; or in the sickle-like bend of his hocks, a disposition to curbs. Take a colt out of his native fields and place him in a warm stable, and feed him well, and you predispose him to all sorts of inflammatory affections: you render him *plethoric*; and *plethora* (as has been already shewn) is a condition verging on disease.

In the course of our observations in practice, we appear to note two sorts or kinds of predispositions:—a *healthy* and an *unhealthy* predisposition; which may either pre-exist independently of each other, or may, seemingly, be engrafted one upon the other. To explain what I mean, I will suppose several horses of tender ages to be pent up in warm stables, put to work, and fed accordingly: some of these will get colds; some inflammations of the lungs; some swelled legs; some farcy; some glanders; some ophthalmia, &c. In all, the same exciting causes have been operating, and apparently under the same circumstances: we can only explain the different results by asserting that the predispositions have been different. We will suppose, however (by no means a very uncommon case), that one of these horses having an attack of swelled legs is worked on, either without any treatment at all for them, or after such only as has but imperfectly subdued the malady: the case, which was in the first instance but ordinary swelled legs, now turns into one of

farcy. We may account for this by supposing, either that an unhealthy predisposition has become engrafted upon that which was originally healthy in its tendency ; or by saying, that the intensity of the exciting cause has been such as to create malignant effects, even under any sort of predisposition. I knew a horse—a farmer's riding horse that was used on all occasions, and always appeared in health—after having been (as he was every now and then) hunted with Lord Derby's hounds, and returned to his stable, tired and *over-marked*, who took to swelling of all four legs on the following day, in combination with symptoms of fever and high nervous excitement, and who, at the end of a week, was shot for having become virulently farcied and glandered.

EXCITING CAUSES are such as, when applied to the body or any part thereof, at once *excite* the disease. A blow, a burn, a blister, inoculation with glandered matter, the vitiated atmosphere of a close and foul stable, are all exciting causes. In nature, therefore, it is obvious there are but *two* kinds of causes; one that *predisposes*, and one that *excites*. According to the rules of medical logic, both of them must operate in the production of disease: the part must be predisposed before the excitement can take effect. There are many exceptions, however, to this rule. An excitant may (as in the case of a red-hot iron) be so potent as to take effect under any circumstances; though, even in this case, the effect will be greater under circumstances of predisposition. On occasions it happens, that that which at one time is but a predisposing cause, at another becomes an excitant: such is the case with vicissitudes of temperature; particularities in feeding; irregularities in exercise, &c. Sometimes, the exciting cause appears to be altogether wanting; at least, it is not discoverable by us; in which cases we are in the habit of attributing to the disease a *spontaneous* origin: after all, however, it seems but a tacit acknowledgment, that we are in ignorance of its inward hidden exciting cause—its *primum mobile*; for, as in physics so in medicine, where we see effects we naturally look for causes.

A CLASSIFICATION OF EXCITING CAUSES has been made

into *mechanical, chemical, natural, and malignant*. The mechanical causes comprise blows, bruises, cuts, punctures, and wounds, and such-like injuries of all sorts. The chemical causes include escharotics and caustics of all kinds, blisters, irritants, &c. The natural causes are vicissitudes of temperature, and irregularities in diet and exercise. The malignant, are poisons of all descriptions: the virus of glanders and farcy, and of rabies; animal effluviæ; the poisons of venomous creatures; and vegetable poisons of all denominations.

THE PROXIMATE CAUSE is that change in a part or organ wherein the disease is seated, on which its existence immediately depends. When we speak of the *nature* or *essence* of a disease, we speak of its *proximate cause*. In a word, it is the disease itself—it has nothing to do with *causation*; and therefore I thus briefly dismiss it.

#### FORM AND PROGRESS OF DISEASE.

THE FORM a disease assumes will, then, (from what has been said) appear to depend on two leading causes: on the state of the system at the time of its generation or eruption; and on the nature and intensity of the exciting cause. Some peculiar conditions of the body there are, under the influence of which, no matter how trifling or insignificant the exciting cause be, disease will be sure to assume the unhealthy or malignant form; while under other and more ordinary states, even though the exciting cause be in itself unpropitious, a healthy action will result. The nature or intensity of the exciting cause, however, may be such as to insure, when it takes effect at all, under any circumstances of predisposition, an unfavourable or malignant effect; as in the case of farcy and glanders from contagion, from concentrated animal effluviæ, from excessive exertion, &c.

THE PROGRESS of disease in the horse, whose organic powers possess such strength and vigour—whose vascular system is one of such great development and activity—and whose body abounds in rich blood—could not fail to be (as, indeed, we find it to be) remarkable for its rapidity. In man, the celerity with

which disease proves fatal is owing, chiefly, to nervous excitement, or what is called *constitutional irritation*: but in horses it will proceed rapidly to its end, and yet run through the stages of inflammation, and extinguish life, at last, from sheer organic destruction. Inflammation of the lungs has been known to run on to a state verging on gangrene, and destroy the animal, in consequence of the arrest put to the circulation, within twenty-four hours of the onset of the attack. Diseases of the nervous structures, however, at the same time that they bear no sort of proportion in number and variety in horses and men, are likewise less active in the brute creation.

## KINDS OF DISEASE.

Diseases are distinguished in relation to their *seat*, their influence, their intensity, their duration.

A *local disease* is one circumscribed in its situation and effects, extending its influence no farther than the part or organ in which it is seated. A *general* or *constitutional disease* disturbs the system at large. Splints, spavins, curbs, windgalls, and other lamenesses, also slight or trifling injuries or irritations of all sorts, come under the head of local diseases: while such disorders as amount to sickness—inflammations of the lungs, bowels, brain, and other organs—form a class of general or constitutional diseases, inasmuch as their influence is felt through the entire system; although, as far as their seat alone is concerned, they are, indeed, but *local*. The only disease we have whose seat is said to be general, is *fever*: this, however, is but a subterfuge—an excuse for our ignorance in not knowing in what organ or set of parts the diseased action is primarily or principally going on. Such is the nature of an animal body, and the reciprocal sympathy or relationship existing between its different parts, that, in general, no organ can be affected to any amount or extent without occasioning a correspondent disorder in other parts of the system; converting that which was in its origin perhaps purely local, into a general or constitutional affection. On the other hand, it may and does happen that a

constitutional affection may settle itself down into a local disease: such is very commonly the case with *strangles*.

*Acute* and *chronic* are epithets applied to diseases in relation to their intensity and duration: the *acute* being the violent, painful, well-marked form—that which rapidly runs its course, and speedily ends either in death or convalescence; the *chronic*, the tardy, lingering, protracted form—that in which a disorder, less painful and characteristically marked, may continue for weeks, months, and even years. The diseases assuming the most acute forms in horses, are, cholic, inflammation of the bowels, peritonitis, pleurisy, inflammation of the lungs, and mad staggers; though some of these even, in particular inflammation of the lungs and peritonitis, often appear quite in the reverse or chronic type. The most remarkable example we have of chronic disease, however, is furnished by what we call, emphatically, *chronic glanders*; a disorder that has been known to continue for years, and without, to appearance, deteriorating at all the general health of the animal.

#### NUMBER AND NAMES OF DISEASES.

OF THE NUMBER OF DISEASES any individual animal is disposed or liable to, the nature of disease itself forbids any attempt at calculation. Diseases exhibit such shades of intensity, difference, and resemblance; such affinities and connexions; such variations and fluctuations; that any undertaking of the sort could not fail to terminate but in disputation and disappointment. That the disorders of horses are much less in number than those of the human species, is not to be questioned, no more than that they are less complicated, generally speaking, in their nature: all this, however, is nothing more than any naturalist or pathologist would be led to anticipate, when he had compared the systems of the two animals, and contrasted the regular and uniform habits of life of the one with the irregularities and dissipations of the other. The horse is in a measure exempt from two, and those two of the most fertile sources of disease in man, viz., emotions of the mind, and intemperance in

living: we have only to look over the catalogue of human nosology to see how frightfully they add to the number of our own complaints.

THE NAMES OF DISEASES are of importance to be noticed, because, conveying notions as they in general do of the seat or nature of diseases, these notions may be true or may lead us into error. Very many of the names at present in use among veterinarians owe their origin to some one particular symptom of the disorder more prominent or remarkable than the rest: of this kind are *strangles*, *staggers*, *roaring*, &c. While others of a coarser description are only emblematic of the barbarous ignorance of those with whom they arose: such are *grease*, *molten-grease*, *broken-wind*, *mourning of the chine*, &c. The modern medical nomenclature, as far as it goes, will be found very convertible and appropriate in veterinary medicine; of which *pleurisy*, *hydrothorax*, *pneumonia*, *carditis*, *enteritis*, *cystitis*, &c., furnish examples.

NOSOLOGY means the arrangement or classification of diseases. In the acquirement of science, let it be of what description it may, the utility of *system* or *method* is universally acknowledged: not only is it of great use to the student; it is serviceable even to the teacher. And yet, important as it is, by all parties, and particularly in medicine, admitted to be; and notwithstanding that medical men of the greatest talent have exerted themselves in framing *systems of nosology*, yet are we at the present hour without one to which we can satisfactorily have recourse, as being free from objections. There is not so much room for evincing surprise, however, at the apparent disinclination that exists to attempt one, when we come to reflect how imperfect our knowledge is of the *nature* of diseases in general, and even of the *seat* of some: it would be as reasonable to suppose that Linnæus could have formed his "*Systema Naturæ*," without possessing a thorough comprehension of the distinguishing characters belonging to the manifold species and varieties of animals and vegetables, as to expect a perfect system of nosology from men, themselves but imperfectly acquainted with the principles of the science they professed to systematize.



The only sure foundation nosology can have is one grounded in anatomy and physiology: we have, however, no sooner laid the foundation, than we find ourselves embarrassed in what manner to erect the superstructure. While, on the one hand, anatomy inclines us to assemble in one class all such diseases as infect parts of identical structure; physiology, on the other hand, points out how natural it would be to class them according as they affect organs whose functions are similar, or, at least, all tending to the accomplishment of one and the same grand operation in the system. By pursuing the former method, we segregate organs united in their economy, and break up physiological systems; by following the latter, we dissever identical textures. In fact, there appears to be only a choice of evils; and I shall endeavour to select the least.

#### TRANSLATION AND PROBABLE TERMINATION OF DISEASE.

METASTASIS means the translation or shifting of disease from one part or place to another. This is a circumstance that may arise either from the supervention of overpowering disease in a fresh part, or in consequence of its arrest or subsidence in the one primarily affected; it being a law in the animal economy, that no two great or paramount actions can go on at the same time in the system. One of the most remarkable instances we have of metastasis in veterinary medicine, is, *fever in the feet* supervening on inflammation of the lungs; a case in which the disease is said to "fall down" into the feet. The sudden arrest of an habitual frush will be apt to induce lameness by causing congestion, or even actual inflammation in the foot. In some cases, metastases are explicable through the well-known and acknowledged vascular, and nervous or sympathetic relations existing in the system. In the instance of the suppressed frush, the vascular congestion is only what one would be led to expect. In specific ophthalmia, the eyes are affected alternately in consequence of their fellowship or mutual sympathy. In the case

of the inflammation in the lungs *falling into* the feet, however, the same explanations are not applicable.

PROGNOSIS, a Greek word literally signifying *foreknowledge*, is the term we apply to an opinion given concerning the probable event or termination of the disease present. Accurate observation and long experience will so far mature our judgment as to enable us in most cases to offer a prognosis; though perhaps not altogether unincumbered with doubt, yet of a nature sufficiently satisfactory to convince our employers of our comprehension of the case in question, and that we are at least no vain pretenders to the art we profess. In one instance we assure the owner of the horse "that nothing can save our patient;" in another, that "from *present* appearances there is no reason to doubt of the ultimate restoration of the animal." The word "*present*," as it stands here, is prudently and properly introduced into the prognoses of medical men in general; the changes and fluctuations of disease often being such as to astonish and disappoint even physicians themselves.

#### TREATMENT OF DISEASE.

THE TREATMENT OF DISEASES consists in the employment of such means as tend to their cure; and in the art of cure more is expected from us than from human practitioners. If a surgeon can save the life of his patient with the loss of a limb, or his sight—nay, even with the loss of a quarter of his whole body, as is nearly the case when the lower extremity is amputated at the hip-joint—the medical man not only satisfies his employers, but often, and most deservedly, gains great credit for the *cure* he has performed. But what sort of a cure would a man be persuaded we had made of his horse, when we returned the animal to him *blind*, or with the loss of a leg? It behoves a veterinary surgeon to restore the diseased part to its healthy functions—to render the animal sound, as the saying is, "in wind and limb," or he runs a risk not only of not giving satisfaction to his employer, but even of encountering the unmerited and

cruel return of losing “the purest treasure mortal times afford” for all his earnest and anxious efforts to bring about a favourable issue.

The general principles on which practical medicine is conducted are in themselves few and simple and undeviating, let what animal may be the subject of treatment: they, in course, adjust themselves to the views we may take of the nature of disease; therefore it follows, though the animals themselves be different, yet, if we admit the identicalness of the nature of their diseases, we must suffer ourselves to be governed by the same set of principles in their treatment. In most disorders the living actions are *excited*—inflammation, in some form or other, is present; to counteract and reduce which, our principle of treatment becomes, in one word, *depletion*. Some—comparatively few—morbid states there are in which the functions are *depressed* or debilitated: here we must act on an opposite principle—*stimulation*. A third principle on which we practise medicine is one we are compelled, equally with the other two, to admit, though, at the same time, it is one concerning which we seldom pretend to offer much by way of explanation: we may denominate it *the principle of experience*; though it more commonly passes under the appellation of *empiricism* or *quackery*, from the abuse that is made of it by pretenders to the art of physic as an impenetrable shield to their gross and harmful ignorance.

“Come take my pills, they’ll cure all ills,  
Past, present, and to come.”—*Morison loquitur*.

MEDICAL PRACTICE, in fact, is a combination of *rational* and *empirical* means: the one consisting in the employment of remedies whose operation and effects on the animal economy are known and calculated on; the other, in the blind application of medicinal agents to the disease without any reference to the state of the animal functions, or the circumstances under which their agency may be harmful at one time, though they prove beneficial at another. Every scientific practitioner knows that it is not on the remedy itself, so much as on the *mode* and *cir-*

*cumstances* of its exhibition, that its success depends : and this it is, chiefly, that distinguishes the man of medical education from the empiric or pretender to the art of physic.

THE MEDICINAL AGENTS employed for the cure or alleviation of disease, are derived from each of the three grand kingdoms of nature ;—the *mineral*, the *vegetable*, and even the *animal*. Some of them are exhibited, in prescribed quantities and proportions, *internally* ; others are used as *external* applications. Some are given and applied in the state in which they are found in nature ; but the greater number of them undergo, before they are considered fit for use, some modification or preparation in the hands of the chemist. In the use of medicine, though theory may often enlighten us in our calculations, experience is to be our grand rule of procedure : it was experience that taught the learned Boerhaave, “ that the great art of medicine consists in the application of the proper medicine, in the proper dose, and at the proper time.”

FORM OF MEDICINE.—We commonly have it in our power to exhibit medicine either in a *solid* or a *liquid* form. As a solid, we give it either in the form of a *ball* or a *powder* ; as a liquid, either in a *drench* or in the animal's *drink*. The ordinary form in which we make up medicine, and beyond all comparison, for many reasons, the best, is the *bolus* or ball. And this should be of a *long* cylindrical shape—not of that short oblong form which, when there is any difficulty in swallowing the ball, may be mostly traced to be the occasion of it. Of this shape I have given and seen given balls, now, for nearly thirty years ; and I have never once witnessed an accident of the kind just alluded to—never once been troubled with a case of “ ball sticking in the throat.”



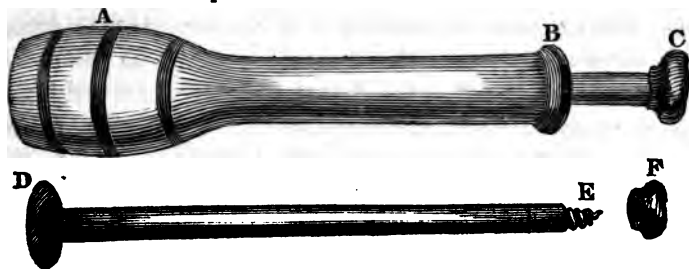
Powders can only be adopted in the exhibition of medicines of an inodorous and tasteless character, such as *calomel* and *antimony*. *Nitre* seems, however, to be an exception to this rule. A horse

appears to be by nature pleased with the flavour of salt, for he will readily eat bran-mashes with nitre in them ; or if a piece of rock salt be laid in his manger, he will be licking it continually.

THE LIQUID FORM possesses the advantage of more speedy operation : this is an advantage, however, that cannot come into effect until the drench has been introduced into the stomach ; and how to get it there is a question not always of easy solution. Some horses will *take* a drench in the common way, with the drench-horn, very well ; others will drink it best out of a common wine bottle ; while others, again, prove so untoward and refractory as hardly to be made, by force, to take it at all. In fact, though I am willing to admit that an expert operator with an able assistant may evince much dexterity in giving drenches, but too often it happens, either from unsteadiness in the horse, or inexpertness in the operator, that the patient loses a third or a half of his dose ; and the consequence is, the effect we calculated on is not produced. In our efforts to *gain* time in the operation of the medicine, we have *lost* time, inasmuch as we are driven to the necessity of repeating the dose. To which I may add, that a larger dose of medicine is generally required to produce an equivalent effect in the form of solution, than in that of ball. I do not mean to say that I have entirely abandoned the practice of giving drenches ; but that, from the uncertainty attending their operation, I very rarely have recourse to them. There are some medicines which we can exhibit, conveniently enough, by dissolving them in the animal's water or common drink. Arsenic and corrosive sublimate are of this kind. We may also mechanically mix some light powders that will not easily or at all dissolve in water with his drink, such as calomel and croton powder. In these experiments, it requires that the pail, and water, and medicine, should all be of the cleanest description ; and, in some cases, the animal will require to be kept short of drink, or without any for a day or two, before he will take the medicated water.

THE ADMINISTRATION OF MEDICINE to horses is, in general—at least in the form of ball—an operation easily and readily performed : a man has nothing else to do but to carry

the ball between his fingers to the back of the throat, and lodge it upon the base of the tongue, by the retraction of which it will be drawn so far within the pharynx, that the animal is compelled to swallow it: added to which, if the ball be of a proper shape, it will be swallowed in that direction in which it will find the conduits best adapted for its transmission. A very useful mechanical contrivance for giving balls was put into my hands twenty years ago, by Farrier Major Thomas, then of the Artillery, which I have still by me, having used it, more or less, ever since. It is called a *ball-gun*, I suppose from its resemblance to the child's pop-gun; the ball being pushed or shot out of it somewhat after the same manner as the pellet is from the latter.



A B C represents the ball-gun, complete, with the piston or ram-rod (C) drawn out as far as it will go, in order to leave the bowl or cup (A) unoccupied, and ready for the reception of the ball. D E F represents the piston or ramrod, supposing it to be drawn out from the barrel of the gun (A B) altogether, which is readily done by unscrewing the knot or nut (F) from the male screw (E). At the other end of the rod (D) is fixed a circular plate of iron, which plays backwards and forwards within the bowl, pushing out the ball, or any thing that may happen to be lodged inside.

Mr. Goodwin, sen., has evinced much ingenuity in attempts to improve on this homely contrivance. He has constructed an instrument, which, instead of having an internal moveable rod or rammer, is so contrived that the bowl itself moves; so that instead of the ball being thrust forward, it is left upon that place in the mouth but just before occupied by the bowl of the instrument. There is much science and ingenuity

displayed in this contrivance ; but it is a costly one ; and, after all, is neither so sure nor so safe in its operation as the common ball-gun. Drenches are administered either with a *drench-horn* or a common *wine-bottle*, and the assistance of the *elevating pole*. We are very much in want of some improvement here.

VIS MEDICATRIX NATURÆ is the phrase used by medical men to express that power innate and inherent in every body endowed with life, of repairing its own injuries and rectifying its derangements. To the existence of this self-acting curative power we owe the healing of wounds, the union of fractured bones, and, in fact, that disposition which, if not openly manifested, is secretly at work, not only in every injury, but in every disorder of the body, towards the restitution of health. Though the general or natural tendency of this power be salutary, however, it is right that we should know that it may, from various causes, become over-excited or depressed, or have its action perverted in such manner and degree as to tend towards even an opposite result. These deviations from the healthy or natural action constitute the phenomena of disease. Our duty, in reference to the *vis medicatrix*, is to direct it, to control it, to take care that it be not thwarted or counteracted, according as the case may be: it may and often does demand curbing, or it may require exciting; it may even call for temporary repression ; destroyed it cannot be but with life itself. There are many cases of an external nature, and some even of internal disorder, which, from the known resources of the system, and the manifest salutary operations of the *vis medicatrix*, call for nothing by way of treatment at our hands beyond abstinence from that which would obstruct or interfere with their cure. And, indeed, in every case, though it is ever our duty to be guided in the steps we take by what is actually going on in the diseased parts, and the effect that action is likely to have on those parts, as well as on the system at large, yet we must not lose sight of the medical axiom—that Nature (or what we medically call the *vis medicatrix*), can do every thing without remedies ; but that remedies can do nothing without Nature.

THE DEATH OF OUR PATIENT gives us an opportunity of

investigating the seat of disease, at the same time that it affords us more or less insight into its nature. The dissection and examination of diseased parts—*morbid anatomy*, as it has been called—in this respect often supplies us with information of a highly valuable description: and, in the opportunities of obtaining this, veterinary surgeons possess every advantage over surgeons; of which it becomes their duty to avail themselves, and endeavour to profit by. It occasionally happens that horses die whose bodies disclose no perceptible marks or traces of disease; but it much oftener happens that more or other disease is found on *post-mortem* examination than was anticipated during life: a circumstance that forms an additional reason for its habitual performance.



## Section II.

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### I. INFLAMMATION.—II. TREATMENT OF INFLAMMATION.

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## INFLAMMATION.

NOTWITHSTANDING we are forced, in the present state of pathological science, to admit that disorders do exist in which no manifest signs of inflammation can be discovered, yet, from its universal influence in disease, do we feel ourselves fully warranted in laying it down as an axiom, that he who has made himself acquainted with the laws and phenomena of inflammation, has acquired almost all the useful knowledge of the nature of disease in general which it is in our power to impart to him.

Our lexicographers define *inflammation*, in its passive sense, to be “the state of being in a flame;” in accordance with the signification of the Latin word, *flamma*, flame, the radicle from which it takes its derivation. The word is of ancient and even sacred use. In the delivery of the laws to Moses, which were to be observed by the holy tribe of Levi, we find it introduced into the language of Scripture, in reference to the signs or tokens by which the priest is to be guided in discerning the leprosy. “And if the bright spot stay in the place and spread not in the skin, but if it be somewhat dark, it is a rising of the burning, and the priest shall pronounce him clean: for it is an *inflammation* of the burning.”

ORIGIN OF INFLAMMATION.—Augmented or excited sensibility appears to be the earliest indication of the approach of inflammation. It is that which immediately follows the application of a stimulant of any description; as well as that to which, as far as we are able to judge, the vascular phenomena that succeed seem directly referrible: the energy of the vascular

powers seeming, in the first instance, to be roused through excitement produced in the nervous system. A tingling sensation—such a one as would be produced by a sort of commixture of heat and pain—draws our attention to the part affected, and we discover that it has, all at once, as it were, become red, hot, tumid, and painful: to express which condition in one word, medical men use the term, *inflammation*.

### SYMPTOMS OF INFLAMMATION.

THE SIGNS OR SYMPTOMS by which inflammation is known to have commenced are, then, *heat, pain, redness, and swelling*. Celsus, who wrote before the Christian era, thus quaintly exhibits them:—

“*Rubor et tumor eam calore et dolore.*”

As the Roman author has handed them down to us, so they stand in our present descriptions; not as individually, but as *collectively* constituting inflammation. Both heat and redness may be created in a part by friction, by woollen coverings, by exposure to the fire: pain will result from nervous irritation, and from spasms or gripes: and swelling will arise from extravasation of blood under the skin, or from the efflux of any of the secretions—urine, bile, saliva, &c.: and yet, in none of these instances is inflammation present.

HEAT, the symptom from which inflammation derives its name, is perceived in a more or less remarkable degree according to the situation of the part inflamed: at the same time, let it be observed, that it is a sign consisting rather in effect than in reality. That there exists a sensation of heat—nay, even one of burning at times, any one who has had a whitlow in his finger will not fail to remember: but the universal hairy covering of the horse (hair itself being a bad conductor of heat) renders the sensation to our fingers in him comparatively dull, though it occasionally must exist in the inflamed part in great intensity, as appears evident from its penetrating even the thickness of the hoof: which it does, and often to a degree to render that part

actually hot under the hand, in *fever in the feet*. The air expired in cases of violent inflammation of the air-passages is so charged with heat from passing over the inflamed parts as to convey really a burning sensation. There cannot, therefore, be entertained a doubt respecting the increase of temperature of *external* parts. But it is different in regard to *internal* organs: they, from not being exposed, are not subject to that depression and fluctuation of temperature to which the external are; and, moreover, are already heated up to that standard which every warm-blooded animal has in every situation the power within himself of maintaining uninfluenced (at least to any material degree) either by external or by internal causes. Mr. Hunter excited a high degree of inflammation within the rectum and vagina of an animal, without being able to augment the temperature of those cavities, at most, above a degree or so of the thermometer: in fact, he concluded, that "the heat could hardly be said to be increased." We may, therefore, lay down these two axioms concerning heat in inflammation—that the temperature may be augmented in any external or exposed part as high as the natural standard of the heat of the body (which, in horses, may be stated at 100 Far. ther.); but that in parts already of that temperature, inflammation, though attended with a *sensation* of heat both to the sufferer and to the person examining them, is not found to become augmented in reality (or but very little) beyond that point. The truth being, that more heat is generated—that it is generated much more rapidly—than in health, and consequently operates (through the nerves of the inflamed part) on the feelings of the patient, as well as on the perception of another person; although the actual temperature of the part, from the heat being carried off as fast as produced, undergoes all the while but very trifling augmentation.

PAIN, though equally present as a symptom of inflammation in ourselves and in brutes, and probably equally variable in the one and in the other, yet is one concerning which we naturally gain more information from observation on our own than on animal bodies. Animals, it is true, at times most feelingly and impressively exhibit their sufferings, bemoaning our aid, though

not in speech, yet in the language of signs too plain and palpable to admit of being misunderstood: for all this, however, though they may, in a great measure, make us sensible of the *intensity* of their pain, they leave us often much in the dark—or rather would leave us so, were it not for analogical reasoning on what happens in similar cases in our own persons—respecting the *kind* or *nature* of the pain they suffer. In the generality of cases we are much assisted in our investigation into this symptom, by recurrence to the facts—that pain is augmented by any use, or motion, or exertion of the part inflamed; and that it is likewise increased by pressure upon it. The poor sufferer labouring under *fever in the feet*, advances his hind legs as far under his body as possible, in order to relieve the fore ones, in which effort he puts himself into such a characteristic posture as denotes, at once, to the experienced practitioner the nature of his complaint. In cases of lameness, it is the pain that occasions the halting, whereby we are informed that disease is going on somewhere in the limb, concerning which, but for that symptom, we should probably remain in ignorance until such time as the work of destruction had made too great advances to admit of remedy: an event apt to occur in neurotomized horses, in whom the hoof may be shelled even before we are warned of the presence of disease, and thus the animal become for ever ruined. In inflammations about the body within our reach—in *strangles*, for instance—we ascertain the degree of pain felt in the tumour by *pressure*: we apply our fingers upon the part and press it, or we grasp it and squeeze it, and accordingly as the animal shrinks or flinches from these tests, we estimate the pain he feels. It must be remembered, however, that there are disorders of the most painful and grievous nature in which inflammation has not been discovered either to exist at all, or but in a secondary or incidental form: such are *spasms* (“gripes,” as they are vulgarly denominated) and *tetanus*.

REDNESS is so rarely exhibited in the course of the practice of the veterinary surgeon, that he would almost be justified in withholding his assent to its existence, did not analogy forcibly convince him of the fact. Those who know anything of the

nature of inflammation in man (whose skin is white and hairless), would never think of doubting the presence of redness in inflammation in horses, although their pilous covering debars us from having ocular demonstration of it: shave the hair off, and redness will be found in one animal as plainly as in the other. In parts naturally bare—the *eye*, the *membrane lining the nose*; and in white and cream-coloured horses, the *muzzle* and *lips*—the scarlet change is apparent enough, assuming the same aspect as the correspondent parts do in man. Could the foot, in a high state of fever, be stripped of its horny case, it would probably look like a piece of intensely red raw flesh. The total absence of *redness*, and the comparatively imperfect manner in which we are too often compelled to judge of *pain* (two out of the four cardinal symptoms of inflammation), may serve to convey some idea of the disadvantages in practice under which veterinary surgeons labour in comparison with surgeons.

SWELLING or *tumour* may be either predominant in inflammation, or else may be almost, if not altogether, wanting, according to the nature and situation of the part affected; though the latter is but a rare case compared with the former. One of the most remarkable instances we have of swelling is furnished by *strangles*. Generally speaking, the tumour assumes the spherical form, being most prominent in the middle, or where the inflammation runs highest, and where the greatest heat, as well as pain or tenderness, are felt: from this prominent part, which is firm and tense, the swelling on every side declines with a regular and uniform slope, becoming, as it grows distant from the centre, more impressible and softer to the feel. Parts whose texture is dense and fibrous—such as tendons, ligaments, cartilages, and bones—swell but little under inflammation, compared with soft parts, and such as are of lax and cellular composition. Some parts are so closely enveloped by fibrous unyielding sheaths that they are prevented from swelling to the extent they otherwise would: such is the case in common sprain of the back sinews, in which not half the tumour is evinced as would happen were the sheath itself ruptured; an accident that does every now and then attend the sprain. In like manner the eye, when inter-

nally inflamed, is prevented from swelling by its fibrous case. Most of all, however, the foot is worthy of observation in this respect: however highly inflamed, though its vessels may, and doubtlessly do, become turgid under inflammation, it is impossible the parts can actually *swell*, closely covered and walled in as they everywhere are by the thick and unyielding hoof.

To these four, which may be regarded as the primitive or cardinal signs of inflammation, may be added a *fifth*—

**IMPAIRMENT OR SUSPENSION OF FUNCTION.**—When the eye is in a state of inflammation, vision is more or less impaired: should the ear be in the same state, deafness is the consequence. In inflammation of the kidneys, either no urine at all is secreted, or but little, and that of a morbid quality. In *hepatitis*, the dung passed by the animal is clay-coloured, from deficiency of bile. When one of the four limbs, or any part thereof, is in an inflamed condition, the animal halts or goes lame: a circumstance arising, in most cases, from two causes—from actual inability on the part of the moving powers to perform their functions, as well as from the pain which such movement causes to the animal. With facts such as these before us, we cannot refuse our assent to the introduction of this sign, which may be denominated the *concomitant* of inflammation.

## THEORY OF INFLAMMATION.

WHEN we come to consider the almost universal presence and all-paramount influence of inflammation in disease, we shall evince no surprise at learning that the part of our subject to which we are now arrived is one that has for years—I might say, ages—in an especial manner engrossed the attention of all members of the medical professions. The four indispensable signs of its existence—*heat, redness, swelling, and pain*—have at all times been acknowledged, the same as they are handed down by tradition, oral and scriptural, to the present day: plain and obvious, however, as these four facts are, and simple as they appear to be in their nature, yet have they collectively furnished materials for more hypotheses and disputation than any one individual sub-

ject in the whole range of medical inquiry. The *blood* and *blood-vessels*—in particular the *capillaries*—were by all admitted to be the parts principally concerned in the production of these changes; but the moment they came to explain *how* and in what manner these two parts were respectively or correlatively affected, there arose a difference of opinion. The earlier pathologists confined their views exclusively to the blood, looking upon inflammation as the result of a vitiated state of the *humours*. This error was no sooner exposed, than an equally undivided attention was given to the bloodvessels: their action was found to be considerably increased under inflammation, and to the augmentation of blood thrown into the part in consequence of this, were attributed the phenomena of redness, heat, and pain; there still being a difficulty in reconciling the swelling with this theory. To surmount this obstacle, it was said, that the increased action only affected the vessels running into and those of the inflamed part itself; that in them the blood was *congested* from meeting with obstruction in its course. This obstruction, Boerhaave asserted, consisted, in some inflammations, in thickness and viscosity of the blood, a condition he called *lentor*; while in others he found it to be owing to the larger globules of the blood being impelled into vessels too small for their transmission, which he designated *error loci*. Cullen disputed this theory, contending that the *vessels*, and not the blood, were in fault. “The cause of obstruction,” says this learned writer, “is *spasm* of the extreme arteries supporting an increased action in the course of them.” So far as distention or swelling is concerned, spasm is a condition quite opposed to it, and one that would indicate that *less* instead of more blood existed in the inflamed part. In framing theories on inflammation, the grand difficulty has been found to consist in reconciling the increased action of the vessels with a state of preternatural distention of them. The more a vessel is distended, the more we believe its contractile power to be weakened; so that we are not only giving the vessels more to perform, in supposing their volume of blood to be augmented; but in supposing them to be, at the same time, dilated, we are placing them under circumstances the

very opposite of such as are most favourable for exertion, which are those of *diminished* capacity. Then again, the point is not yet finally settled, whether the capillary vessels possess of themselves a power of propelling their own blood, or it be forced through them by the action of the heart; or whether or not the two powers act in conjunction in circulating the blood, as seems the most probable: at all events, these considerations present difficulties which, when added to the universal and potent influence of the nervous system, contribute greatly to the complexity of any investigation into the nature of inflammation. Of late years the subject has undergone renewed inquiry, and much assistance has been afforded by a closer and more accurate observation of parts actually under disease than appeared to have been given in times before; and the result has been, the pretty general admission of certain facts or *data* on which future theories may be more safely grounded.

THAT AN INCREASED QUANTITY OF BLOOD IS SENT TO AN INFLAMED PART, admits of demonstration: first, From the *throbbing* of the arterial trunks supplying it, which is an unequivocal sign of increased action; secondly, From the state of the part itself; viz., *a.* its unusual redness; *b.* the evident distention of its vessels; *c.* their actual dilatation or enlargement, as has been proved by experiment; *d.* the consequent admission of red blood into vessels which before were of insufficient calibre to admit any but the serous or finer and colourless parts of that fluid.

THAT THE BLOOD IN THE INFLAMED PART IS NOT ACCUMULATIVE, CONGESTIVE, OR STAGNANT, BUT IN CONTINUAL ACTIVE CIRCULATION THROUGH IT, is demonstrated—first, By the distended and enlarged state of the veins which convey it away; secondly, By the experimental fact, that more blood will flow within a given interval from those veins than from the correspondent vessels on the opposite or healthy side of the body—a result Mr. Lawrence has uniformly obtained in letting blood at the same time from fellow venous trunks in the arms of a man, one of which only was in a state of inflammation; thirdly, From the circumstances of inflamed parts, when cut into, exhibiting



blood of the *arterial* character, and yielding it *more rapidly* and in *greater profusion* than correspondent or contiguous parts that are in health.

CONDITION OF THE CAPILLARIES.—This brings us to the pith and marrow of the question. And from what has gone before it appears, that the blood, which is sent to the inflamed part in augmented proportion, so far from being congested or anywise stagnant, or even meeting with any impediment in its course, is actually flowing with increased velocity, as well as fulness of current, through the capillaries, as is made manifest both by its character and by the plethora of the vessels that conduct it away. Were it detained in the capillaries, or retarded in its course through them, it would undergo the changes naturally consequent on its protracted absence from the heart, and turn purple or black in its hue; and, moreover, would issue but tardily from the venous trunks: whereas, we know that the contrary of both these suppositions is the case. In fine, it would appear, from what facts and evidence we are able to collect, we must come to the conclusion, forced and even unnatural as it may at first seem to us, that the blood is actually circulating through the capillary system of a part under inflammation both in greater proportion and with more rapidity than through the same vessels in a state of health: the only rationale of which extraordinary or preternatural performance I can offer is, that the vascular powers are roused to it and rendered capable of it, through augmented energy inspired into them by the nervous system. Let us see how these explanations tally with the symptoms.

RATIONALE OF THE REDNESS.—This symptom is evidently owing to augmentation of blood in the inflamed part; filling all its vessels to repletion, and distending numerous ones with red blood whose calibre in health is too small to admit but the finer and colourless particles of that fluid. The character or shade of the redness is owing to the quality of the blood, and also, in some measure, to the natural vascularity of the affected part: the florid scarlet complexion of the part being attributable to the arterial character of the current of blood; while tendons and ligaments assume less redness under inflammation than skin and muscle,

from the circumstance of their being naturally less vascular. I say "naturally" so; for, as Mr. Hunter tells us, "parts inflamed appear to become *more* vascular;" though he imagines that appearance may be owing to the dilatation of the capillary vessels. The same distinguished pathologist placed the ear of a rabbit in a situation where it froze; after which he thawed it: this occasioned intense inflammation. In this condition the animal was killed, and the two ears injected and afterwards dried. The uninjured ear dried clear and transparent, beautifully displaying its arborescent vessels from a *single* trunk; but the inflamed ear dried thick and perfectly opaque, at the same time exhibiting vessels double in number, and of larger size; and instead of one, *two* principal trunks.

**RATIONALE OF THE HEAT.**—An animal body derives its heat from its circulating blood. That fluid in its passage through the lungs undergoes, by exposure to the air, certain changes, in consequence of which it acquires heat in a latent form, to be evolved in a sensible one in the course of its circulation over the body: consequently, any part through which a larger quantity of blood circulates than natural will be hotter than natural. At least, as was before observed, this will be the case with parts whose temperature is by nature below the standard of heat of the body, which is from 98° to 100° Far. Not but that more heat is actually evolved in every situation under inflammation; but, as was before stated, it does not appear to be accumulative, or but to a trifling degree so: it seems to pass off almost as quickly as produced, operating on the sensations of the patient without, in any thing like a proportionate degree, raising the actual temperature of his body. Mr. Hunter conceived that the body had the power of generating *cold* as well as heat: and though his proofs of this are, perhaps, rather of a negative than positive kind, we may certainly go so far as to say, that it exerts, at all times and under all circumstances when required, operations to abate or carry off excessive heat. Our theories on the subject of animal heat are not yet sufficiently matured to enable us to speak very plainly or decidedly on the present point. The nervous system is probably very influential; and this will neces-

sarily add to the complexity of any rationale of heat one might have to offer.

THE RATIONALE OF THE PAIN is referrible, exclusively, to the nervous system. The nerves of the part under inflammation appear to be in that state of excitement, that causes which under ordinary circumstances would create but common sensation, now produce pain. One cause appears evident in the tumefied condition of the part itself: the general bloated and tense state of the inflamed tissues must operate in pinching the nervous filaments entering into their composition, at the same time stretching many of them considerably beyond their natural tone. In parts of an unyielding nature, such as tendons and ligaments, the pain is often violent, at the same time peculiar in its kind, owing to the severity of the compression the nerves must experience during the more tensely swollen condition of the parts. Any thing that tends to relieve distention to a certain degree, at the same time relieves the pain felt in the part: during a violent and dangerous inflammation in my own hand, I experienced considerable mitigation of the pain whenever I maintained it in a position with the hand elevated, and the arm, as much as possible, extended; the return of blood through the veins being thereby greatly facilitated. On this principle it is that pain is felt augmented at every throb or fresh distention the inflamed part undergoes. Gradations in pain and kinds of pain, which in course are both very variable, will in a degree admit of explanation on the score of the number and distribution of the nerves the part inflamed may contain; the yielding or unyielding texture of the part; the violence of the inflammation; and also, in some measure, on the nature of the exciting cause: after all, however, we shall find ourselves forced to confess, that the morbid sensibilities of the nerves will not admit of complete elucidation until we have become better acquainted with their operations in health.

RATIONALE OF THE SWELLING.—The tumour of an inflamed part is ascribable to two causes:—to the immoderate distention of its vessels with blood, and to effusion from their exhalent terminations of part of that blood in the form of serous

fluid and coagulable lymph into the cellular interstices of the inflamed and surrounding textures. In the early stages, the swelling seems attributable simply to distention: effusion, however, speedily supervenes, and in the latter stages constitutes the major part of the tumour, imparting a degree of plumpness and firmness to it, and often remaining, even after the inflammatory action has subsided. The firm solid feel the tumour has about its middle or more prominent part, when the inflammation runs highest, is owing to the effusion of a mass of gelatinous matter, which, on examination, turns out to be the same as the coagulable lymph or fibrine of the blood; while into the surrounding parts, where the swelling is less prominent, and has a softer and more doughy feel, serous effusion is found mingled with the solid deposition. In anasaruous or œdematous affections, the effusion seems altogether of a fluid or serous nature.

#### CAUSES OF INFLAMMATION.

INFLAMMATION may arise in a great variety of ways, some of which are obvious to us, while others are either mysterious in their nature, or else altogether concealed from our view. Numerous and various however as these are, they admit of classification, conveniently enough, into *accidental*, *spontaneous*, and *sympathetic*. An inflammation is said to be accidental when its exciting cause is self-evident, and in itself is commonly extrinsic to the body; comprehending all such as arise from mechanical and chemical injuries and irritations of all kinds, as well as such as are ascribable to atmospheric vicissitudes and excitations. Spontaneous inflammations are those that are imagined to spring up of their own accord; though, perhaps, it is better to say, without any apparent or assignable cause: they are mostly what are called *inward affections*. Sympathetic inflammations owe their production to disease in other parts of the body.

MECHANICAL INJURIES comprise wounds and contusions and abrasions of all sorts; sprains, dislocations, and fractures; undue exertion of any part or organ, or of the body altogether, what, in hunter's phrase, is called being "over-marked."

CHEMICAL EXCITANTS comprise all such substances as possess properties of an acrid, or corrosive, or poisonous nature, few of which exist in that form in nature, but derive their power from the chemical laboratory: they are the mineral acids, the caustic alkalies, the metallic salts, and, in fact, every preparation coming under the denomination of a caustic, or escharotic, or irritant, and which, for the most part, we are in the habit of using in our practice of medicine.

STATES OF THE ATMOSPHERE—heat and cold, moisture and dryness, all in their turn become excitants of inflammation; their mischievous agency residing more in the vicissitudes from one state to its opposite, than in any obnoxiousness in our climate from their excess or continuance. They may operate either directly, as excitants; or indirectly, simply as predisposing causes. Generally speaking, horses turned out from warm stables and exposed at once to the open air, even during the inclement seasons of the year, seldom “take cold,” or experience any direct inflammation from the change; though the reverse of this vicissitude cannot be practised without such danger, and especially with young horses. Although horses, however, escape immediate evil from the first change, I believe few veterinarians now-a-days will feel inclined to deny the uncongeniality of cold and wet to their constitutions (as is evinced by the appearance of the animals under their influence), or to maintain that they do not very often in such situations contract the foundations for disease which, at some future time, is apt to break out and prove fatal to them. Cold, abstractedly from wet, even although it be alternated with heat, is not found to be near so prejudicial as when moisture is present too: hence we are in the habit of viewing frosty weather as a season of health among horses; and hence it is that the spring and autumnal months are the most unhealthy, the weather then being moist and variable, and the wind generally in a cold quarter. But, independently of these changes, there are conditions of the atmosphere we regard as *peculiar*, simply from the circumstance, seemingly, of their being incomprehensible to us, which, when they prevail, are apt to produce a sort of *epidemic* among horses, or what some call

an *influenza*. We might, indeed, say of the disease, as of the exciting influence, that we know but little of its nature; and add, that all we can do by way of remedy amounts to little more than we practise in any ordinary case of inflammation or common fever.

ANIMAL POISONS, as well as natural ones, are found to be occasionally suspended in the atmosphere, and through its medium to produce their effects. The air of a hot and ill-ventilated stable, may prove an excitant of inflammation, not only from its high temperature, but also from the noxious effluviæ with which it has become impregnated by the dung and urine and breath of many horses stabled together. These poisons may also be conveyed through the medium of the secretions. Rabies and other diseases produced by the bites of venomous creatures, are transmitted through the *saliva*. Farcy and glanders may be transferred by inoculation with the matter of either disease; and mange is probably conveyed in some peculiar exudation from the skin.

SPONTANEOUS INFLAMMATIONS are such as arise without any assignable cause. That there are many of that description we have daily proofs of; and yet it is contrary to our philosophy to suppose that diseased action can be set up without a cause, though it be one difficult or impossible for us to discover. Such as we are in the habit of detailing as the causes of disease, are, for the most part, extrinsic to the body: we do not appear to consider, in general, with sufficient accuracy the internal functions of the body, and what a variety and number of causes may be engendered through their faulty action, or the imperfection of that fluid, the blood, through which they are all kept in action, and on which many of them are operating. Were our knowledge of structure and function perfect, and we had a thorough comprehension of the relations subsisting between the body and the various agents and influences naturally or necessarily connected with it, we should probably be enabled, in every instance, to link disease with its cause, and thus frame a full and satisfactory system of nosology. But at present we are not only much in the dark concerning internal causes; we even lack knowledge

about those that are external; and, in particular, in respect to atmospheric influence on the body.

SYMPATHETIC INFLAMMATIONS are such as owe their origin to disease or disorder already existing in the body. Mr. Hunter shewed us how apt one set of parts were to take on disease through what he called "sympathy," at the time that another was suffering; and Mr. Abernethy has prosecuted the subject with a success truly enviable by those who are emulous in serving their fellow-beings. He has more fully demonstrated the effects of local disorders on the constitution, and, at the same time developed the reciprocal operation of constitutional disorders on local diseases, and has placed the subject altogether in that practical point of view that both surgery and medicine have been very materially benefitted by it. In man, the digestive organs oftener than any other evince disorder; in the horse, the respiratory apparatus is the most common seat of disease: both which sets of organs when disordered may, in their turn, become the cause of disease in other parts of the body. The skin sympathizes readily both with the digestive and pulmonary organs; and so do the urinary apparatus and the brain. There exists a striking sympathy between congenial or analogous structures: disease of one serous membrane is followed by disorder in another; and so it happens with the mucous, and likewise with the fibrous membranes in different parts of the body. Sympathy is also evinced in a remarkable manner between fellow-organs on opposite sides of the body: one eye is no sooner affected with ophthalmia, than we begin to entertain apprehensions for the opposite one.

#### PROGRESS OF INFLAMMATION.

THE PROGRESS OF INFLAMMATION may be rapid or may be slow, depending on its violence, its nature, the part it is affecting, its exciting cause, the condition of the animal, and other collateral circumstances. Generally speaking, it assumes the violent form, and runs its course rapidly; or, in technical language, is of the *acute* character. At times, however, it ap-

pears in altogether a different character—in a mild, or sluggish, or indolent form—taking then the epithet of *chronic*. But we shall not only have to mark the acute and chronic *kinds*; we shall likewise meet with acute and chronic *stages* of inflammation; for, in fact, it rarely preserves the same character throughout its progress. Both its commencement and its decline are slow and imperceptible: indeed, the latter is commonly protracted and wearisome. Notwithstanding, however, that these acute and chronic forms run into each other; and notwithstanding that they are both said to be inflammation, yet is the process a different one in the one case from what it is in the other; and therefore it is that chronic inflammation is followed by results which we never see or even look for in the acute disease. It might be supposed that in the mild or chronic inflammation, there being commonly but little pain or inconvenience felt, there was little comparative danger: this is an inference, however, that must not be too widely drawn; often it happens that chronic disease proceeds so imperceptibly and stealthily as to make considerable ravages in structure before we become awakened to its presence, and then at too late a period to repair the mischief that has been already done. It too often happens in veterinary practice, that, in consequence of but trifling illness or lameness being manifested by the animal, his master does not imagine it worth while to call in any medical aid: the consequence is, that the foundation becomes laid for that which, by the time we are consulted, is out of the range and power of medicine altogether.

## TERMINATIONS OF INFLAMMATION.

No sooner does inflammation become established than we begin to look forward with more or less concern and apprehension to its consequences, effects, or *terminations*. These will be found to depend on its violence, its duration, the cause that gave rise to it, the nature of the part affected, the peculiar constitution of the animal, and a variety of contingent circumstances, such as the remedies employed, the habits of the animal, the season of



the year, &c. &c. To the several changes and appearances I am about to describe, Mr. Hunter affixed the name of *terminations*, from the circumstance of the inflammatory action subsiding as soon as they had taken place, or, at least, taking so manifest a turn towards decline as to relieve us from all further apprehension. Inflammation may terminate so early and so favourably as to leave the part affected in its original unimpaired condition. On the other hand, the termination may be so protracted, or else in itself of that destructive kind, as to disorganize the structure of the part, or even extinguish its vitality. Or the effects of the inflammatory action may be of that intermediate character which so far affects the structure of the organ as to leave it in a state of permanent or irremediable impairment. The terminations of inflammation are, *resolution*, *suppuration*, *ulceration*, *interstitial deposition*, and *mortification*.

RESOLUTION is the term medical men employ to signify that inflammation has declined and disappeared in a part without occasioning any breach or material derangement in its organization. A horse is brought to us with what is vulgarly called "a sprain of the back sinews:" we examine the leg, and find it puffed or swollen at one particular part, which at the same time manifests heat and tenderness on pressure. We apply a bandage wet with refrigerant lotion round the leg, and, perhaps, at the same time bleed and purge. The swelling, pain, and heat gradually subside: in other words, inflammation is arrested by the timely employment of remedies before it has effected any change of structure. The leg recovers its natural size or fineness, and the animal goes sound again. This constitutes *termination by resolution*. But another horse, we will suppose, in reaching his hay out of a high rack directly over his head, happens to have a hay-seed fall into his eye. Instantly, the eye becomes closed, a flood of tears is discharged, and the animal twists his head about in every direction, to get rid of the annoyance and pain created by so irritative a body sticking in a part so highly sensitive. Some hours afterwards, the groom, not knowing what has occurred, or being unable to give relief, brings the horse to a veterinary surgeon; who, on raising and evertng

the upper eyelid, discovers the hay-seed sticking fast to the conjunctive membrane, which by this time has become as red as a piece of scarlet cloth from inflammation. However, the hay-seed is removed, and by the following day the eye is seen to have recovered its natural colour and brightness. Here is another instance of termination by resolution. There is, however, an evident difference between this and the case of the sprained leg; inasmuch as in the one instance resolution was accomplished within the space of twenty-four hours; while in the other it required a week—perhaps a month—to bring it about. In the case of the eye, inflammation existed in its purest or genuine form, consisting in little else but turgescence of the capillaries, which, now that the irritant is removed, and the circulation in consequence diminished, contract on their too copious contents, and recover their original diameter: whereas, in the instance of the leg, effusion had evidently taken place, in addition to the distention of the vessels; and where such is the case, not only is the inflammatory action itself more permanent, but the matters effused have to undergo, in the end, the tedious process of absorption. These evident distinctions in the mode of termination by resolution have led to the introduction of the French term, *delitescence*, to denote the quickly vanishing or evanescent form, in contradistinction to the lengthened and occasionally wearisome process which still retains the name of resolution.

. METASTASIS, by which is implied the sudden shifting or translation of inflammation from one part of the body to another, occasionally becomes a concomitant of delitescence: indeed, we have too often reason to apprehend this change when we see so sudden and spontaneous subsidence of disease. It is very remarkably the case in *pneumonia*. When inflammation in its acute form suddenly declines and quits the lungs, we may almost to a certainty predict that it will attack the feet—in the grooms' phrase, "fall into the feet." In like manner, we find it often suddenly leaving one eye to invade the other. Nay, in some cases, we see some most extraordinary and unaccountable metastases, of whose origin and nature we appear quite unin-

formed: a horse will come out of the stable one morning so lame, without any discoverable cause, as hardly to be able to walk; and on the next day, probably, will be sound, or else evince equal lameness in the opposite limb. There are also instances of metastasis between the internal organs of the body—between the alimentary canal and brain, the liver and lungs, the stomach and kidneys, &c.: in fact, there probably exist many of which we do not or cannot take cognizance.

SUPPURATION is the term we use to denote the production of *pus* or matter in the inflamed part. It is the mode of termination we in general naturally look forward to when inflammation, resisting all we may do, runs higher, or even continues longer than the circumstances of the case permit us to calculate on resolution; or where there is breach of surface or any sort of wound: suppuration in this latter case becoming the natural and almost inevitable consequence. For example, a horse has that sort of tumour under the jaw which we call *strangles*. We apply our remedies; but the swelling, instead of diminishing, increases in size, grows daily more prominent, and tense, and tender on pressure, and then gradually changes to a soft, impressible, fluctuating tumour. At this stage it contains *pus*; which, unless vent be given to it, will augment and accumulate in such quantity as to distend the tumour and burst it, leaving behind a vacuity or cavity in which the matter has been lodged. It was this deficiency of substance, probably, that gave rise to the notion that existed in former times, of suppuration consisting in the dissolution of the solid parts, which (when melted down) became *pus*. We now, with more reason, regard suppuration as a process of *secretion*; and *pus*, as a product from the blood, the same as the urine, or the bile, or the semen is; and we pretend to know no more about its specific elaboration than we do about the production of these other secreted fluids. In the different textures of the body under inflammation, although *pus* may, from the degree or kind of the inflammatory action present, from retention or the admixture of other fluids, or other contingencies, exhibit some diversities in its appearance, yet in all does it evince the same intrinsic properties—possessing globules,

resembling in all but in colour, those contained in the blood, and yielding in its analysis both albumen and fibrine; an identity of composition with the blood itself, which, coupled with other corroborative facts, has induced Laennec to believe that pus is really nothing more than converted coagulable lymph. Be this as it may, it is a fluid produced without any apparent expense or difficulty in the animal economy, though with much more apparent facility in some parts than in others. All unnaturally exposed parts—wounds and abrasions of all descriptions—readily run into suppuration: to them pus seems to form a sort of natural shield from injury, and, at the same time, a salve highly conducive to their healing operations. Mucous membranes—the linings of the air-passages and alimentary canal—promptly under disease assume the suppurative action: in common catarrh we see pus mingled with mucus ejected from the nostrils; and in inflammation of the bowels we may occasionally detect it coating the dung-balls. In the instance of strangles, which, as a local inflammation, we may regard as a case of simple

ABSCESS, there needs, however, preparation, and seemingly a higher degree of elaboration, before suppuration becomes established; although it is apparently, from the very first, the end for which the local inflammation was set up. The cells of the cellular membrane in the beginning become filled and blocked up with solid matter, identical in appearance and nature with the coagulable lymph of the blood; in the very centre of which solid mass, or at the point where the inflammation runs highest, is deposited at first a drop of purulent matter: this drop gradually augments, the surrounding solid substance being as gradually absorbed, until, at length, a cavity containing a collection of pus is formed, or, in other words, an *abscess* makes it appearance.

ULCERATION may be defined to be, a breach or loss of substance apparent externally, or a consumption of substance internally, occasioned by the removal of parts by the absorbents. It is an effect, although not, strictly speaking, a *termination* of inflammation: were it so, its consequences would be in the highest

degré perilous and lamentable. We have an example of internal ulceration in the case of the abscess. No sooner is pus deposited than the solid tumour begins to disappear under the effects of absorption or ulceration, a process said, in this instance, to be brought about by the pressure occasioned by the purulent matter. The result of the ulceration is, that a cavity is formed for the pus, which, in the end, becomes so thin from absorption in one particular spot, that it bursts, and gives vent to the contained matter. External ulcerations are not common in horses, although we have instances of them. We see them upon the membrane of the nose in glanders; and upon the skin in farcy. One of the best examples we have of ulcerative inflammation is afforded by the skin of the heels; a part which, in consequence of its remoteness from the source of circulation, and from the vicissitudes of heat and cold, moisture and dryness, to which in the winter season in particular it is exposed, becomes very subject to inflammation, and in that state very prone to run into ulceration: hence the origin of the foul troublesome ulcers we so often meet with in the heels in wet and cold weather. Some parts are more disposed to ulceration than others; a circumstance ascribable, apparently, to their relative degrees of vascularity: the skin seems to stand first on this list; the mucous membranes certainly rank next; then come cellular membrane and bones; and, lastly, cartilaginous, ligamentous, and tendinous textures. This accounts for the ulcer in the heel not running deeper than through the skin; the cellular tissue beneath being indisposed to take on the same action. The same observation may be made in regard to the ulcerations of mucous membranes: the recent glandered ulcer extends only through the schneiderian membrane, spreading over its surface rather than dipping into the comparatively little organized cartilage beneath. In the case of a deep-seated abscess or aneurism, however, although the same susceptibility to ulceration is manifestly observable, yet by a law invariably observed in the animal economy, do matters confined in the body, and doomed to be discharged, make their way by absorption or ulceration either directly to the surface of the skin, or else to one of the common

emunctories—to the alimentary canal, or to the air-passages. Although nothing can resist this natural impulse, yet it is curious often to observe what a strange course the matter will take to avoid causing the ulceration of some important or vital part, and how the bloodvessels and nerves will escape the general destruction, while bones even are undergoing the process of absorption. Though comparatively but rare diseases, yet, when they do occur, *poll-evil* and *fistula* too often afford us dreadful examples of the ravages ulceration may make among bones and cartilages. Spavin likewise, and also disease of the navicular joint, commonly furnish us with specimens of ulcerative action in the same structures.

GRANULATION is the process by which chasms or vacuities, occasioned by ulceration or by external injury of any kind, are filled up again with new material, out of which parts similar to those lost or abstracted are reproduced: in fact, it is only another name for what used to be termed *incarnation*, it being commonly *flesh* that is wanted to fill the wound. As soon as the ulcerative process becomes arrested, and the parts remaining recover their healthy action, we perceive springing up from the innermost recesses of the chasm, little red pointed eminences, which, from their grain-like shape, have received the name of *granulations*. In the first instance, they consist purely of coagulable lymph; soon after, bloodvessels, and nerves, and absorbents shoot into them, and they then obtain the power of secreting purulent matter, which becomes very serviceable in defending them from external irritation of any sort. In their organized state not only do they become secretive, they likewise, in their turn, become procreative bodies; so that one crop of granulations produce a second, a second a third, and so forth in succession; coalescing and inosculating one with another as they grow up, until at last the chasm becomes filled with them, and nothing remains but for the surface to be covered with skin, to complete the healing process. In the usually healthy and vigorous constitution of the horse, granulation commonly proceeds with a luxuriance of growth calling rather for repression than encouragement. When they grow beyond the level of skin; which they

are very apt in their exuberance to do, they constitute what is called *proud flesh*, and require escharotic applications to eat them away. It would appear that such parts as are found indisposed to ulcerate, likewise granulate with difficulty: hence arises the sluggishness and intractableness of the ulcer in the heel when once it has penetrated the skin, and becomes bottomed by cellular membrane; hence, also, comes the indisposition of cartilage and ligament to assume the granulative action, as we have proof sufficient of in treating cases of poll-evil, fistula, quittor, canker, &c.

CICATRIZATION is the last stage of the healing process—the *skinning over* of the wound or ulcer. As soon as the work of incarnation is completed, and the chasm is become uniformly filled with granulations, the raw surface acquires a levelness, and smoothness, and *dryness*, it never before presented; changes which, on close examination, we shall find to arise from a filmy covering of glutinous matter deposited upon the granulations, and the consequent cessation of the secretion of pus. Skin is one of those parts it is in the power of the constitution to reproduce. It would seem, however, that the process must be either a difficult or expensive one, since the surrounding old skin uniformly contracts over the sore, so as to have as little as possible of the surface remaining to be covered with new skin, which contraction it is that occasions the puckered appearance we may observe the scar or *cicatrix* of all old sores to have: the middle of the scar, the part made up of the new skin, being commonly bare, or at least possessing but a few scattered hairs, and those mostly grey ones. What renders this contraction of the skin the more remarkable, is, its continuance even for months after the cicatrization of the sore; so that the scar will go on, though but tardily, yet progressively diminishing, and, in the end, prove of much smaller dimensions than we probably had anticipated.

HAIR is facilely and speedily regenerated so long as the skin continues whole, and the bulbs that produce it (which are lodged within the substance of the skin), consequently, remain uninjured: indeed, so long as this is the case, hairs will be reproduced even though they be plucked out by the roots. Where

new skin, however, exists, or where the injury to the old is such as to destroy or disorganize the pilous bulbs, no hair at all will grow over the place, or, at least, not for a considerable time; for I believe, in the course of years, even the bulbs themselves are regenerated, though, if we may reason from their produce, but in an imperfect manner. When we perceive weak, scattered grey hairs growing over the spot, as soon as the part is healed up, we may conclude that the bulbs have not altogether been deprived of their organization. Attention to these circumstances will enable us to answer a question so frequently put to us in cases of *broken knees*:—"Will there be any scar or mark left?" Indeed, these are almost the only cases in which such a result is of much moment.

INTERSTITIAL DEPOSITION will comprehend the processes of *adhesion, induration, scirrhus, hepatization, ossification, softening*, and, in fact, all changes of structure.

ADHESION.—Having completed the description of the process of granulation, and seen how the wounded or ulcerated part is ultimately covered with skin and hair, I shall now return to the case of an open wound, and point out the other mode of healing which the constitution possesses, and which it ever, when it can, adopts in preference to the tedious and circuitous one we have just been describing: I mean direct union of the divided surfaces by a process called *adhesion*. Whenever a clean cut wound is made through the skin (as in operations with the knife), and the sides of the wound are immediately or shortly afterwards brought together and maintained in apposition by plaster, or suture, or bandage, or other artificial means, we have reason to expect adhesion and union of the divided parts, and that the wound in this summary manner will be healed up and cured. Mr. Hunter called this *union by the first intention*; in contradistinction to the process of granulation, which he designated *union by the second intention*; and he imagined (and naturally enough) that the blood (effused in consequence of the division of its vessels) formed the bond or medium of union.—"The blood being alive," said he, "becomes immediately part of ourselves, and, the parts not being offended by it, no irritation is produced."



The red particles are absorbed, and nothing but coagulating lymph is retained, which being the true living bond of union, afterwards becomes vascular, nervous, etc." Subsequent and more accurate observation, however, has shewn this conjecture to be erroneous. It is now well known that extravasated blood, let it be in what part of the body it may, is uniformly removed by the absorbents; it being found to act rather as an irritant or foreign body than one suited to become "part of ourselves," as Mr. Hunter conceived. For all this, however, it does answer a purpose, and an important one too, in the case of the fresh wound; for it keeps the divided parts glued together until such time as the bloodvessels ooze forth the real and permanent agglutinating medium, which is coagulable lymph; the same material as is thrown out in the form of granulations, and as forms the swelling in strangles and other tumours by being effused into the interstices of the cellular membrane. The process of union by adhesion is not *completed* until such time as this intermediate uniting substance is *organized*—is furnished with bloodvessels and nerves; an end which is brought about by the vessels and nerves belonging to the parts divided shooting through the uniting material, and inosculating with one another. From the surface of a fresh wound, not more than four hours are required to produce the coagulable lymph; and, in a few hours after, it will be found to possess vessels capable of receiving injection.

In human surgery, adhesion constitutes one of the happiest resources of the surgeon: to it, in cases of wounds of all sorts, is the surgeon's attention at all times directed, as constituting, wherever it can be put in practice, the most prompt, safe, and effectual method of cure he can adopt. And, indeed, so far as its excellence and preference are concerned, the veterinary surgeon has equal reason to keep it stedfastly in view; though, unfortunately for him, when he comes to apply it to practice, he finds it, comparatively speaking, but for the most part an unavailable remedy. Could we stick straps of adhesive plaster upon a horse's wound, the same as a surgeon does upon that of a man, and, at the same time, persuade or even compel our patient to keep the part quiet and in a state of repose, lest he

disturb the dressings, and open or irritate the wound, we should derive quite as great (if not greater) advantages from this mode of union as the surgeon enjoys. But, unfortunately for us, we are unable to accomplish either. Plaster will not adhere to the skin of the horse, covered as it is every where with hair, unless the hair be shorn off, and even then the bristles soon disturb it; nor do we possess any means of keeping our patient in that state of quietude which is absolutely and indispensably necessary to the well-doing of the wound. Generally speaking, the only plan we can pursue in these cases, is, to make use of *sutures*—to sew the parts together with needle and thread: but sutures are annoying agents, and very apt (coupled with the disturbance from motion the parts commonly meet with) to create irritation, and that brings on suppuration: so that, after all our attempts to produce adhesion, it commonly happens that we are foiled, and find ourselves reluctantly compelled to suffer the wound to heal by the comparatively tardy process of granulation. Not but what we every now and then see instances of union by the first intention: they are, however, I repeat, but comparatively rare. The result of the common operation of bleeding is sufficient to shew, that, so far from there being any innate indisposition in the horse's skin or flesh to unite, its tendency to union is singularly vigorous and opposing. How would the arms of men fare, were they served the same as horses' necks are after bleeding? Would they not, almost one and all, inflame and fester, and form abscesses? When surgeons are compelled to use sutures—for they never have recourse to them but through compulsion—they naturally look for suppuration in place of immediate adhesion. We have, however, one advantage over the surgeon, in some measure counterbalancing these inconveniences; which is, that the granulating process in horses is carried on with a rapidity and healthiness hardly known in human surgery.

REPRODUCTION OF STRUCTURE.—Whether parts be abstracted or destroyed, or whether they be simply divided, we have seen that *coagulable lymph* is still the material by which the chasm or breach of continuity is restored: we are now about to inquire what changes this lymph undergoes, or in what cases

and to what extent it undergoes conversion into structures the same as those whose place it supplies. In cases of simple division of parts, or where there has been but little loss of substance, the coagulable lymph by which they are united, and the breach repaired, is after a time to that degree absorbed, that the original parts are quite or very nearly brought, by contraction, again into contact; but, where there has occurred much loss of substance, it remains, as a temporary substitute at least, for the deficient structures. We observe this well exemplified in the instance of the skin. When there has been but little or no destruction of its texture, we find the borders of the wound gradually contracting, and ultimately uniting so completely as to require no new skin whatever: and even when the injury has been extensive, and much additional skin seems to be wanting, still, the old spreads itself out as far as it can, so as to leave the smallest interval possible to be covered by new. This niggardness on the part of the formative agents plainly evinces to us that new formations are expensive processes. Some structures are said to be reproducible after being partially lost or destroyed; others are, very plainly, unregenerate: a substance fills up the breach, and unites the divided surfaces, but it is a substance that will bear no sort of comparison with the original texture. Skin is one of those parts said to be regenerate: the place, however, covered by new skin is ever afterwards not only conspicuous to the common observer, from its hairless condition and puckered aspect—and hence has got the name of a *cicatrix*, or scar—but likewise apparent to the anatomist, who discovers, that, from a deficiency or density in the cellular tissue beneath, the new skin is tightly and immoveably bound down to whatever part may happen to be situated underneath it, and that in consequence thereof he cannot make in this spot the same clean and facile separation of parts which he has been doing elsewhere. Added to which, if we compare the new skin closely with the old, we shall find manifest differences in their intimate texture and organization. The same observation applies to mucous and serous membranes: although both are regenerated after losses, yet in neither instance will the new-formed structure bear com-

parison with the original formation; the cicatrix after a time turns white, from possessing a lower degree of vascularity than the surrounding parts, and often exhibits (as in cases of acute glanders), from contraction, a puckered and sort of radiated aspect. Neither the olfactory papillæ nor the mucous follicles are discoverable in the cicatrix. Bone seems to be a substance reproducible with peculiar facility; indeed, there is in the horse a remarkable disposition inherent in many of his structures to take on what is called the *ossific inflammation*: cartilage, and ligament, and tendon are, in particular, of this character; blood-vessels occasionally become osseous; and even the heart itself has been found partially changed into bone. To these fibrous textures we may add the muscular and nervous structures, neither of which seems susceptible of regeneration, although their losses are, in the first instance, repaired by coagulable lymph, the same as those of other parts. After the operation of neurotomy, it is true, the divided extremities of the nerve after a time unite: the uniting chord, however, is found to consist of fibro-cellular material different altogether from the pulp of the original nerve, with commonly a little knot or protuberance about its middle. Breaches in muscles are repaired by some such fibrous material, differing in nature from muscular fibres themselves, yet serving the purpose of a connecting medium, and by that means more or less perfectly restoring their function.

INDURATION, SCIIRRHUS, HEPATIZATION, OSSIFICATION.  
—These terms express changes in the structure and organization of parts, one of which we may look for whenever inflammation is of a character less acute than such as is commonly followed by suppuration; and, at the same time, is found to continue long or to relapse often in the same organ. On some occasions, inflammation of an acute kind will run to a certain height, and then, abating very gradually, will leave the part tumid, solid, and firm, and even hard to the feel, with diminished heat and sensibility; in which condition it may, without suffering further conversion, continue for some considerable time, and then by a process of interstitial absorption recover its natural state: or the inflammation may run tardily on to a more or less perfect suppuration;

or else the tumour may, by degrees, lose all external signs of inflammatory action, and ultimately become *callous* or indurated, or experience a change into a fibrous substance of the nature of cartilage, or even into bone. In this case, the inflammation seems slowly to expend itself in interstitial deposition, the deposit, in the first instance, being simply coagulable lymph: the other changes, of whatever nature they may be, supervening upon this primary or necessarily preparative one. These changes are probably more ascribable to the duration or repetition than to the subacute character of the inflammation: at the same time, much depends on the structure and condition of the part affected; some organs being from their nature greatly more disposed to such changes than others. Glands are especially subject, under long-continued or often-relapsing inflammation, to what is called *scirrhus*; by which we mean to imply consolidation, induration, and conversion of their cellular and secreting textures. *Hepatisation* denotes something of the same sort of change, only that the solidified and converted part has a *liver-like* aspect: it is a term oftenest found applicable in pulmonary cases. In regard to osseous transmutations, I had occasion before to observe, that the horse is especially prone to them: he possesses hardly any structure but what, at one time or another, has been found partially or entirely changed into bone; and where bone itself, or even cartilage, is concerned in the inflammation, we look for it as a sort of natural consequence: hence we may explain the production of splints, spavins, ringbones, ossified cartilages, ankylosed joints, &c.

Such changes as these, although they do not directly tend to endanger the life of the animal, yet may so disturb or interfere with the functions, organic or animal, as to render life itself a burthen, or else to that degree to incapacitate the animal as to reduce him almost, or quite, to a state useless to his owner. A property of the utmost consequence to the horse, as an animal of strength and speed, is *good wind*; nothing, however, oftener tends to impair this, and permanently deteriorate it, than changes such as we have been describing taking place in some part of the respiratory apparatus: in the air-tube, or its branches,

giving rise to *roaring*; in the lungs, to *short* or *thick wind*, and, in fact, every defect of that nature with the exception of broken-wind, that being the result of another set of causes. Lamenesses of various kinds, of a permanent or incurable nature, are referrible commonly to altered structure; without the power to re-convert which, we are left without remedy for the inconvenience in action occasioned by it. How many a valuable horse is ruined by the formation of exostosis; in other words, by the conversion of that into hard and brittle bone which by nature is in itself yielding and highly elastic.

SOFTENING denotes a change the reverse of induration, which has been occasionally observed to take place in certain parts that have laboured under inflammation; but, in this case, the inflammation is rather of an acute than a chronic description. Our attention was first drawn to this novel sort of change by the French writers, by whom it is now universally acknowledged under the name of *ramollissement*. It seems to have been noted in most, if not in all tissues; the nervous substance, however, in particular is prone to it; it is likewise not infrequently met with in cellular and mucous membranes. The affinity to cellular tissue may serve to explain its occurrence in glandular structure: in the horse, the liver frequently exhibits softening as well as change of aspect altogether, a condition in which the finger may be pushed into its substance with the same facility that it would penetrate a rotten apple or pear; indeed, the farriers seem to have caught at this identical analogy, since nothing is more common for them to find in the course of their *post-mortem* examinations, than that the liver was as "rotten as a pear."

MORTIFICATION expresses the death of the inflamed part. Although producible by a variety of causes as well as by inflammation, yet it is but a comparatively rare occurrence in horses. The inflammation that gives rise to it is of the acutest kind; and the organs in which we meet with it the oftenest are the lungs; though now and then we discover such changes in the bowels. Wounds also of a violent or complex nature in horses whose constitutions are vitiously disposed, will now and then turn to mortification. In a small and comparatively insignificant

way, every slough we create by caustic furnishes an example of mortification. A part in which inflammation is running on to this fatal issue, turns from red to purple, and from purple to black in hue, losing at the same time its heat, as well as its manifestation of sensibility and power of motion. We may know that all circulation and vital action has ceased in it by its deathly coldness; its blackness; its soft and flabby feel; its crackling sensation under the finger, produced by the air extricated within it; and, finally, by its putrid odour. Should it be an internal organ that is affected, the signs of mortification having taken place in general observed are, a sudden and almost total cessation of the symptoms of pain, so that, to a common observer, the animal would appear at first to have experienced a strange and unexpected change for the better: this, however, is but delusion; as is shewn by the wild cadaverous stare of the countenance, the cold clammy sweat upon the skin, the rapid sinking of the pulse, and the stage of delirium which quickly supervenes upon these fatal precursors. For, although recovery does occur after cases of mortification in external parts, it is a very rare thing to have a favourable issue in the case of an internal organ.

The blood contained in the bloodvessels of a mortified part, and even for some considerable distance in the trunks leading into and departing from it, is found to be in a state of coagulation; although the cellular or interstitial substance of the part itself commonly contains abundance of fluid, of a more or less offensive character, dependent on the chemical changes it may have undergone since the departure of life. In cases of external mortification, and where a process of separation ensues between the dead and living parts, this plugging of the bloodvessels with *coagula* is of immense importance, being no less than the means of preserving the life of the animal, which otherwise might, and certainly in many instances would, be forfeited during that process, in consequence of hemorrhage. Independently of this circumstance, however, there is a curious fact connected with the bloodvessels in relation to mortification; and that is, that while other parts in their immediate vicinity, and by which they are

closely surrounded, are dying and sloughing away in consequence of this change, the bloodvessels themselves are preserved from the general wreck, so as to continue their functions unmolested. I had a remarkable illustration of this in a case of fistulous parotid duct, in which it became necessary (by way of remedy) to remove the gland itself. I determined on doing this by a process of sloughing; and with that view injected into it a strong solution of lunar caustic. An enormous and truly terrific slough followed; which, as mortification proceeded, dissected its way with all imaginable precaution amongst the many trunks of bloodvessels and nerves in the neighbourhood, without not only not opening or severing one of them, but without even injuring any.

Having concluded my account of the *primary* effects or local terminations, I shall say a few words on the

SECONDARY OR CONSTITUTIONAL EFFECTS OF INFLAMMATION; though of these it is my intention to speak more fully hereafter. So linked together in functional relation are the different organs and systems in the body; so reciprocally dependent for their general welfare and efficiency on each other; that it is but natural to expect that diseased action in one should occasion disorder in others more immediately connected with it, or, indeed, in the system altogether. Although local irritations or inflammations may go on either in the nervous or vascular system, yet in both are they readily diffusible from a part to the whole; and as these two systems act in concert, and may be said, together, to regulate, and, indeed, execute the principal operations of the body, so we have no reason to feel surprise that inflammations, local in the first instance, should so often as they are known to do, become general affections, or to think it strange that we should be able to subdue a local disease by a remedy whose action is on the constitution at large. These secondary disorders are denominated *sympathetic* or *constitutional*, and are generally comprehended under the term *fever*; under which head I shall proceed with their investigation.



## KINDS OF INFLAMMATION.

Inflammation is either *common* or *specific*—in other words, *healthy* or *unhealthy*. The first is that which presents itself in every common or ordinary case, either of accident or irritation, and which surgeons designate by the term *phlegmon*, from its salutary character and tendency. The second, specific inflammation, derives its name and distinction from certain peculiarities, which, though not, perhaps, alike in any two varieties, yet in all are of such nature as are not met with in phlegmonous or common inflammation: such are specific ophthalmia, glanders and farcy, mange, grease, &c. Although these specifics are brought together in one class, however, so far are they from possessing any common analogy or similarity, that every one of them may be regarded as an inflammation *sui generis*, and perfectly unconnected with any other. Catarrh consists in *common* inflammation of the membrane lining the nose and air-passages: glanders in a *specific* inflammation of the same membrane. In like manner, we have common ophthalmia arising from external injury; and specific ophthalmia from a contaminated atmosphere, or from causes not apparent to us. Notwithstanding, however, that we believe these inflammations to be different in their nature (as they evidently are in their causes and effects), it would appear, in some instances, that one may supervene upon or follow the other: we see glanders succeeding catarrh; though I do not remember ever having witnessed a case of common inflammation of the eye degenerating into specific ophthalmia.

## CHARACTER AND TENDENCY OF INFLAMMATION.

THE CHARACTER AND TENDENCY OF INFLAMMATION (without any reference to its kind) will be greatly influenced by the texture or organization of the part in which it happens to be seated: which is no more than one would, *à priori*, be led to anticipate. Among the simplest and most extensive textures of the body, and one that enters largely into the composition of many others, is *membrane*: but of membrane there are three

kinds; each of which possesses a texture and function peculiar to itself; and therefore would lead us to expect correspondent differences in them under inflammatory action.

OF INFLAMMATION IN MUCOUS MEMBRANES the prominent symptom is *redness*: and the reasons for this are obvious. In the first place, mucous membranes, though exposed surfaces, are uncovered by skin, and are, in some instances, open to the influence of the air: in the second place, their bloodvessels are very numerous, and run so near the surface that the blood is readily distinguishable through them. The broad surface of membrane the nostril when opened exposes to our view, affords us a good opportunity of observing this change of colour. Along with the redness comes turgescence, followed by actual thickening of the membrane. A third change is altered secretion. During congestion or incipient inflammation, the natural mucous discharges from these membranes are simply augmented; their appearances, as in health, being somewhat different in one membrane from what they are in another. As inflammation advances, a serous fluid appears mingled with the mucous discharge, the latter often assuming a lumpy or clotted form. Under active inflammation the natural secretions undergo a change from mucus into pus, or else become altogether suppressed; and in their stead are produced a thin yellow viscid fluid, together with more or less solid gelatinous matter, possessing the appearance and properties of coagulable lymph. In other cases *hemorrhage* results: the violence of the inflammatory action occasioning a breach of some of the capillary or finer vessels of the membrane, and either appearing in the form of spots or *petechiæ* upon its surface, or else being discharged from it. The former appearance is occasionally observable on the mucous membrane of the nose: the latter more commonly happens within the bowels. When the inflammation comes to decline again, the natural mucous discharges return, and by their profusion serve to carry off the remaining inflammatory action.

IN INFLAMMATION OF SEROUS MEMBRANES, redness is not so remarkable a symptom, owing to the lower degree of vascularity possessed by them when compared with mucous textures.

Under subacute or chronic inflammation, they manifest a disposition to pour out a yellow transparent serous fluid, and occasionally do this in very considerable quantities, as is evinced in hydrothorax, ascites, hydrocephalus, and anasarca. Under a higher degree of inflammation, coagulable lymph is effused, as well as this serous fluid, in the form of shreds or bands, glueing the contiguous surfaces together; or else in that of a regular plastic layer of adventitious membrane enveloping the surface of the original texture: we have frequent opportunities of seeing this in fatal cases of pleurisy; also in roaring, and what is absurdly called *molten grease* in the bowels. Under violent inflammation the effused fluid is turbid and whey-like in its appearance, evidently from the admixture of purulent matter; drops and patches of which may often be detected clinging to the inflamed surface of the membrane.

THIS ESTABLISHED DIFFERENCE IN THE EFFECTS OF INFLAMMATION ON MUCOUS AND SEROUS TEXTURES, is of immense and even vital importance in the animal economy. Let us but for one moment reverse the cases. Let us suppose that mucous membranes were as prone as serous ones to effuse coagulable lymph under inflammation: the inevitable consequence would be, that every time the animal caught cold, he would be liable to suffocation from the effusion of solid matter into the passages of the nose or windpipe! And did the serous membranes pour out, when inflamed, such acrid purulent matters as are commonly produced by mucous surfaces, so great would be the consequent irritation, that violent inflammation, mortification, and death would inevitably ensue. Thus we perceive infinite wisdom displayed even in the operations of disease.

INFLAMMATION IN FIBROUS MEMBRANES is most apt to assume the chronic form. Its prominent characteristics are, interstitial effusion, and proneness to run into ossific changes. In cases of inflammation of periosteum or perichondrium, or even, in a general way, of cartilage or ligament itself, and, in particular, of that peculiar elastic substance partaking of the nature of both, osseous deposition and conversion is almost certain to result, and a bony tumour be left to mark, as it were, the spot

where the disease has been. This accounts for the production of splints, spavins, ringbones, anchylosed joints, and other exostoses.

INFLAMMATION IN SYNOVIAL MEMBRANES is characterized by a suppression of the issue of their natural secretion—*joint-oil*—and by the effusion, in lieu of it, either of coagulable lymph or purulent matter, according as the inflammatory action is more or less intense: these membranes are also very much disposed to run into the ulcerative stage.

OTHER STRUCTURES HAVE THEIR PECULIARITIES UNDER INFLAMMATION.—*Cellular membrane* is, in particular, prone to suppurative action: though that is usually preceded by the deposition of serous fluid and coagulable lymph, as a sort of preparative or *nidus* for the reception of the pus. It occasionally happens, however, that this tendency to serous effusion becomes predominant, and we have an abscess containing serum alone, instead of one enclosing purulent matter. The cellular membrane is also the common seat of gangrene or mortification. *The skin* under inflammation will exude a serous fluid from its surface underneath the cuticle, which will be separated by the fluid, and elevated into little vesicles or bladders, as is seen after the application of a blister. When violently inflamed, the skin, denuded of its cuticular covering, will secrete pus, and throw out even coagulable lymph, as is evinced in cases of malignant grease, or where escharotic and destructive blisterings have been practised. Glandular bodies become variously affected by inflammation, depending on its kind, degree, and duration. A low degree of inflammatory action augments the natural secretion of a gland: but a high degree puts an entire stop to it, and will, unless abated or subdued, run on to its destruction and death. Continued chronic inflammation in a gland, at the same time that it alters, in a degree, either in quantity or quality, or both, the natural secretion, likewise gradually changes its internal structure; plugging its cellular interstices with solid matter, and in time bringing forth that total transformation of its interior which we denote by the term, *scirrhus*.

THE STATE OF THE BODY OR CONSTITUTION will have

considerable influence on the character and tendency of inflammation. In horses whose bodies are, and have long been in an unthriving, unhealthy condition, a common swelled leg will occasionally run on to farcy ; and a common catarrh, or strangles, or attack of influenza, be followed by glanders. In other cases, such unfortunate sequels will supervene without any ostensible or discoverable cause whatever. My father had a blood colt sent him by Mr. L——, to be castrated. The colt was low in condition at the time : but not to appearance at all unhealthy. The operation was performed by cauterization, in the usual manner: the after-swelling consequent on it was confined to the scrotum. All went on well until the eighth day, when some small lumps made their appearance on the skin of the outer side of the near quarter; and the colt halted with the limb in walking. Two days from this, similar lumps became apparent on the body, head, and other three limbs ; and there was a discharge of mucopurulent ill-digested matter from the nose. In a fortnight from this period the colt had become so virulently farcied and glandered as to render his destruction the only alternative left. Mr. Coleman saw the case, and attributed the untoward event to the effects of foul air, to which the animal had probably been, at some time or other, previously exposed. The impression on the mind of the animal's owner was, that it had been destroyed through the operation ; on which plea he peremptorily refused to pay the expenses that had been incurred. This case well illustrates what is meant by *unhealthy inflammation* ; though we are in the habit of ascribing it rather to ill condition of body than to any peculiarity in the morbid action of the parts themselves.

**INFLAMMATION A SALUTARY PROCESS.**—Under certain circumstances, inflammation is not only to be endured, but even encouraged, rather than repressed or subdued. Were it not for inflammation and its concomitant effects, no wound could be healed, no bone united, no breach repaired. A puncture into a joint, a lacerated intestine, is alike repaired by inflammation: the same process by which the joint is ankylosed and the bowel mortified. Inflammation works good or harm, depending on the nature and circumstances of the case—on its degree, its

duration, the cause that gave rise to it, the part affected, its character, tendency, &c. &c. ; and the exercise of a sound discriminative judgment in these several particulars it is that constitutes a scientific and experienced practitioner. In pursuance of this principle we now and then find it beneficial to excite inflammation artificially in various parts of the body. We do so often in an external part, to remove or detract, by way of revulsion, inflammation from some internal and comparatively much more important part : blisters, rowels, setons, and artificial irritations of all kinds are practised in cases of sickness with this view ; and the practice is found not only highly beneficial in relieving the patient, but also turns out a very safe one, inasmuch as the fresh inflammation, artificially aroused, commonly exists in a harmless and manageable form ; although, it may be observed, we have no reason for believing that it at all differs in its nature from that which it is designed to counteract. We very frequently, however, excite inflammation, and by similar means, with another view—one altogether different from this ; which is to produce absorption of some tumour or adventitious deposition ; such as spavins, windgalls, curbs, &c. &c. Now and then we use means to stir up a fresh and more active inflammation in parts in which it already exists, but in too sluggish or unhealthy a form to accomplish the desired end : we act on this principle when we pour boiling dressings, or inject caustic ones, or introduce a red-hot iron into fistulas, or poll-evils, or quitters, or sinuses or wounds of any other description.

## TREATMENT OF INFLAMMATION.

To lay down a scientific and rational plan of treatment, we must be well acquainted with the disease the cure of which is our object: we must have ascertained its seat, learnt its history, and have formed in our mind some theory of its nature. Fortunately for us, though diseases are many in number, and though hardly any part of the body can be said to be exempt from them, yet is their essential nature pretty much alike, and not near so varied in different parts as we might suppose it to be, owing to the circumstance of the elemental or constituent textures of the body being in themselves but few. What renders disease in appearance so diversified is, the varied structure of the organs found in the body, and the great dissimilarity that exists between their functions. Inflammation is essentially the same, whether it exist in the stomach, or the lungs, or the brain; but it assumes different aspects in these three organs, is productive of symptoms altogether different in one case from what happens in another, and is tending in each instance, perhaps, to quite a different termination: still, it is inflammation, the same in nature in all three cases, and may have in them all originated from similar causes, and, moreover, requires in all to be treated on the same general principles. When we come to couple with these facts the important one, *that the great majority of diseases consist in inflammation*, it will appear evident, that a knowledge of the treatment of inflammation must form the key to the art of cure generally.

Although our theory of inflammation is far from being perfect, or even what we could desire it to be, yet have we arrived, by dint of careful observation and experience, at very correct conclusions in regard to its character, tendency, and effects: so that when we behold disease in any part, we know at once from the appearances present, and other collateral circumstances, what the probable result will be, and by what rule of practice we ought to shape our plan of treatment. We act partly on the

notions we entertain of the nature of inflammation; but are principally guided by that knowledge which we have gathered from experience. This accounts for our not being able to treat diseases through the medium of *books*: we may acquire general principles—obtain, as it were, an introduction into practice; but the actual practice itself can be learnt nowhere but in the sick stable. On the same principle it is, that a man unversed in theory of any sort—an unscientific, unlettered individual—may make a good common routine sort of either surgeon or veterinary surgeon, purely by dint of practice: it is the man of science and practice combined, however, that can alone direct the ship when she is thrown amongst rocks and quicksands.

In undertaking the treatment of inflammation, it is our duty to obtain the clearest insight possible into its *seat*, its *kind*, its *causes*, and its *present and probable effects*, both as regards the part immediately affected, and the constitution at large. The part in itself may be of a nature unfavourable to the progress of inflammation, or it may be of such comparative unimportance in the system, as to have its functions arrested without any very great inconvenience: or, on the other hand, it may be one of a highly inflammatory disposition; or else, one whose function cannot abide even interruption, much less suppression, without danger of deranging those operations on the continuance and regular performance of which life itself more immediately depends. A horse will have ophthalmia, or mange, or grease, or even glanders and farcy, in certain forms, and yet maintain his general health unimpaired: from the moment, however, he becomes attacked with inflammation of the brain, bowels, lungs, &c., must he be considered in a condition tending to destruction, even of life itself. In the latter case our treatment should, in course, be of a more active and determinate kind than in the former.

*The degree and kind* of inflammation must likewise be taken into account in the treatment. The more active or acute the one, the more brisk and bold should be the other: though, where inflammation is of what is called a *specific* kind, experience teaches us, that we do but little good in our treatment un-



less we can meet the case with specific remedies, such as are found peculiarly adapted for such anomalies. In specific ophthalmia, in mange, in farcy, and in glanders, we bleed and purge but with little comparative benefit: to be of real service to our patient, we must have recourse to something in the shape of a specific remedy.

In regard to the *causes* of disease, not only is our course of treatment in many cases influenced by them, but their removal, if possible, becomes absolutely necessary to effect a cure: consequently, our earliest inquiry should be one leading to the discovery of their nature and operation. Indeed, numerous are the cases in which hardly anything else is required to be done. A horse suffering from ophthalmia from a hay-seed in his eye, will need, commonly, no other treatment than the extraction of that hay-seed. Should a thorn or any other extraneous substance be lodged in the flesh of the body, we shall effect a much more speedy, and, probably, a permanent cure of the case, if we can extract the substance; for, should we not be able to accomplish the extraction, a little case or cyst will be formed for the lodgment of the body (whatever it may be), wherein it will remain ever afterwards: though with some risk of re-exciting inflammation at a future period.

In considering the *effects* or *consequences* of inflammation, as well present as future or probable, we must regard both the part affected and the constitution in general. The part itself may have its function slightly or seriously deranged, or altogether suppressed. The inflammation in it may be so slight or short in its duration as to leave the part in its original sound or healthy condition; or the inflammatory action may be such as has a destructive tendency, running on to suppuration, change of structure, and even mortification. We are not to suppose, because inflammation does not assume a violent form, it is not harmful, and calls for no treatment: chronic attacks of long duration, or frequent relapses of them, are the common precursors of the various changes of structure, and consequent loss of function, which so often leaves the animal in a state of permanent in-

capacity, or comparative uselessness. Frequent attacks of ophthalmia in time so alter the delicate tissues of the eye, as at length to end in blindness : a condition in which the animal is rendered unsafe both as regards his rider and himself. Chronic inflammation of the air-passages is very apt to terminate in thickening and induration of the membrane lining them, and thus give rise to *thick wind*, or to *roaring*. Hepatization of the lungs oftener results from chronic than acute inflammation. Disease of joints—of the navicular and hock, in particular—oftener consists in chronic than in acute inflammation ; and tends, when it does occur and is not speedily arrested, to ulceration of the lining membrane and articular cartilages ; to thickening and induration of the surrounding textures ; and, lastly, to ankylosis : constituting, altogether, the most irremediable class of lamenesses with which we have to contend. It is wrong, therefore, to suffer inflammation to linger long about a part : though mild and harmless it may appear, it will in time effect changes of structure which will so materially cripple the functions of organs as, in the end, probably to disable the animal for life.

I shall make a division of the treatment of inflammation into that which is but *preparative* or *auxiliary*, and that which is *medical*, and the more *essential*.

## PREPARATIVE OR AUXILIARY TREATMENT.

**REMOVAL OF THE EXCITING CAUSE.**—The first thing to be done in the treatment of inflammation is, to remove the *cause*, supposing it to be still operating : indeed (as was stated before), in some affections, this is all that is required to be done : the *cause* being removed, the inflammation gradually subsides, until it ceases altogether. Should a horse pick up a nail in his foot, and that be found penetrating the hoof, and simply wounding the *quick*, its speedy extraction, with a little subsequent attention to the cleanliness of the wound, will be all that is commonly necessary to effect a cure. On the other hand, however, either from the depth of the puncture, or from the irritability of the animal's

constitution at the time, violent inflammation may ensue, and the case call for every attention we can give it.

REMOVAL OF ALL CAUSES OF IRRITATION.—As soon as inflammation has become established, it is necessary not only that we should have removed the cause that gave rise to it, but that we should place the part affected out of the influence of all such other incidental causes as may in any way tend to annoy it, or operate against the subsidence of the inflammation. It would be well if we had it in our power to suspend the function of every organ during the presence of inflammation; over such only as are under the influence of the will have we any control, and over these even, less in animals than in our own persons: though there exists an instinctive aversion in every creature to refrain from that which gives it pain. A horse will not stand upon an inflamed foot; but will throw all his weight upon the sound feet.

When the eye is inflamed, the lids and the haw are drawn over its surface to shield it from the light; which, though under ordinary circumstances a natural and healthy stimulus, now that the sensibility of the organ is augmented, becomes an annoyance to it: this teaches us to take care in cases of ophthalmia to exclude the light.

REPOSE OF THE INFLAMED PART.—All this shews us the necessity of paying attention to the important principle in the treatment of disease I am now endeavouring to enforce, viz. *to put the diseased part, as far as lies in our power, into a state of repose and quietude.* Not only does the part itself demand this; the whole body—the constitution calls for it; and as there are but few local diseases of any magnitude in which the constitution is not sympathetically affected, so the repose that is required is mostly of a general nature. And in no way can we better accomplish so desirable an object than by placing the animal into what is called “a loose box.” A sick horse is so far like a sick man, that every thing in motion about him annoys him;—the noise of his companions in the stable; the narrowness of his stall; the confinement of his head; all this disturbs him: he seems to ask us for a quiet solitary ward, where he can have his head at

liberty, breathe a pure and cool atmosphere, lie down upon a comfortable bed whenever he feels disposed, and place himself in any posture that may afford him the most ease. In thus tranquillizing the system, we shall find we are diminishing irritability and abating vascular action in the part inflamed ; and so rendering it in a condition fitter for the impression of remedial agents, whose operation on it is of a more direct character.

**POSITION OF THE INFLAMED PART.**—With animals, as with children, who cannot be made to understand what conduces either to their good or harm, but little can be effected in this particular : what little, however, can be done, ought to be done. Inflamed muscles, and tendons, and joints, should always be placed in a state of repose, if possible, and at the same time in that relaxed condition which leaves every fibre most at ease. We may commonly do much towards the attainment of this end in the limbs, by raising or lowering the heel or toe of the foot, according as the case may require. Should the head or any part of the neck be the seat of inflammation, it may be found beneficial to keep the head elevated and confined : often much mischief is done by suffering the animal to hang it down upon the ground all day long. In fact, the principle by which we are to be guided in this respect is, to endeavour to maintain the part inflamed in that position which is most favourable to the return of blood from it back to the heart.

**CLOTHING.**—The next step in the auxiliary treatment, applicable in a general way, is attention to clothing. There are but few diseases in which it is not desirable to keep the surface of the body warm, for which purpose we employ woollen clothing. The quantity, or thickness of the clothes must, in course, be regulated by the season of the year, by the previous situation and habits of the animal, as well as by reference to the disease under which he may at the time be labouring : in hot weather, clothing is commonly required rather for the purpose of protecting the animal from the annoyance of flies than for warmth, and, consequently, linen clothing is mostly to be preferred. Where warmth becomes the object, rugs or blankets are preferable to cloths ; when both are used, the former should be placed next the skin.

In no case should their quantity be such as to become burthensome. It is also of importance, especially in cases in which the respiration is disturbed, to take care that the roller be not buckled tight : the elastic rollers are excellent in principle ; the objection to them is, that (without the confinement of a neck-strap, which is itself obnoxious from its pressure on the windpipe) they are continually slipping back. Woollen bandages folded around the legs may likewise be regarded as part of the clothing of a sick horse, and are, when the extreme parts are cold, of great service in causing a diversion of the current of blood, and thus restoring warmth to the limbs.

DIET.—There is so little variation in the food of horses, and so little in the nature of that food apt either to disagree with the stomach or stimulate the system, that we have no occasion to dwell long on the subject of veterinary dietetics. The common food of a horse in the stable consists of oats and hay ; and it is our ordinary practice, during the existence of inflammation or fever in the system, to discontinue the oats, and substitute bran in their place ; and to direct that the bran be given in the form of mashes, in order that it may possess the double advantage of being in itself bland and innocuous, and at the same time laxative in its tendency ; rather than constringent or accumulative within the bowels. On this last account, green meat (whenever it can be procured) is in general to be preferred to every other description of provender. Vetches, lucerne, green clover, and also the various esculent roots, carrots, turnips, potatoes, &c., are all admirably suited for the sick stable, not only because they are more easily digestible than dried food, and, at the same time, tend to keep the body relaxed, but because they are in general far more grateful to the palate of the invalid than his ordinary stable diet. Whatever is given to the sick horse in his box should be placed within his easy reach : his appetite is often of that indifferent or fastidious kind, that, rather than exert himself at all, he will go without food. In cases in which no desire to take food at all exists, it is a common practice to force aliment into the stomach, either by drenching the animal with water-gruel or administering to him oatmeal balls. This force-meat plan I do not at all ap-

prove of. During the height of inflammatory disorder, food is not only not required, but would by its presence in the stomach be apt rather to irritate than benefit ; and as soon as the disorder begins to decline, the appetite commonly returns. Even though the loathing continued for days (which it sometimes does, and without being apparently owing to the virulence of the disorder), I would not force the animal. There commonly exists, in every case where solid food is refused, craving thirst ; and this, if judiciously managed, may be made to supply the defect of want of appetite. Under these circumstances, in place of giving the animal water to drink, let him have a pail-full of well-made water-gruel, perfectly cold, hung up somewhere in his box within his easy reach, and let this be renewed (even whether the old be drunk or not) at least every twelve hours. Should he refuse the gruel, he must not be allowed water ; but be deprived of all drink whatever until thirst compels him to take the gruel, which will answer the end both of victuals and drink. Even water, however, it must be observed, contains that in itself which contributes towards the sustentation of the animal, and will, for a much longer time than many of us are apt to imagine, furnish nutriment sufficient to maintain life in a sick body : in which so little is going on towards expenditure, compared with the consumption of one in health.

AIR.—It is of great importance (in particular in cases of disease of the organs of respiration) that the atmosphere of the apartment of the sick horse be cool, free from impurities, and frequently renewed. Observe a horse suffering from fever or constitutional inflammation of any kind, and you will see his head constantly turned towards that part of the box which admits the fresh air. Be attentive, therefore, to the ventilation of the sick-box ; and likewise look to the cleanliness of it : for where dung and urine are suffered to accumulate, or when the latter does not pass freely off for want of drains, there will surely be more or less vitiation of the atmosphere.

## MEDICAL TREATMENT.

The medical treatment of inflammation consists in the employment of both *constitutional* and *local* means. The constitutional are, *bleeding* and *purging*, with the assistance of *sedatives* and *diuretics* and *alteratives*. The local means are, *bleeding*, *cold* and *warm applications*, and *counter-irritation of every description*.

## BLEEDING.

When we come to analyze the nature of inflammation—to consider that the increased action, which appears to be its mainspring, is maintained by the blood flowing with greater rapidity and in greater quantity through the vessels of the inflamed part, it will at once occur to us, that abstraction of blood must be one of the most direct means of subduing it. To go farther back than this, would be to investigate the cause of irritation; the discovery of which, and its removal, although both even be effected, do not in all instances suffice to stem the inflammation which is the consequence; and, therefore, it generally becomes necessary to attack the inflammation itself. Inflammation can no more go on without blood than blood can be produced without food; the more we reduce the one, the more we shall certainly diminish the other: drawing blood, therefore, is at once the most direct and the most efficacious means we possess of abating inflammation; all others being, in comparison, but of secondary consideration. Indeed, in veterinary practice, it not only forms our most decisive means of cure, but in many cases is the only remedy we have it in our power to employ with any chance of success. In the acute stages of inflammation of the lungs, and even other organs of importance, neither internal nor external medicaments will take effect until we have succeeded in abating the inflammatory action by venesection; and in cases where we dare not purge, or cannot purge, we commonly effect nothing without the lancet. Although, as certainly as we draw the blood out of a part we reduce the inflammation in it, yet we do not by this effect a complete cure: no sooner are the vessels emptied, than they are filled

again; and, in fact, do all we may, there must be time allowed for the inflammatory action to subside: it arose gradually, and gradually it will decline. Professor Coleman once, in a case of ophthalmia, not only tied the carotid and maxillary arteries, but also took the pains to excise the vessels running into the transparent cornea of the eye, and afterwards to make a line of division with a red-hot iron between the transparent and opaque cornea. Notwithstanding all these precautions, however, in the course of three or four days other vessels became produced, and fresh inflammation started up in the eye.

GENERAL BLEEDING is distinguished from *local* or *topical bleeding*, by the quantity of blood drawn being such as to affect the system *generally*; whereas, in the latter, the inflamed part only is affected. In proportion as we reduce the quantity of blood in the body below the standard, we diminish the power of the heart and arteries—the agents by which inflammation is carried on; consequently, general bleeding possesses the advantage of lessening the force by which blood is propelled into the inflamed part, at the same time that it abstracts blood from the place itself by creating a vacancy or demand for it in other parts of the body. Local bleeding, on the other hand, is designed simply to lessen the quantity of blood in the inflamed part.

QUANTITY.—In order to reap the full advantages of general bleeding, we must continue to draw blood, when once a vessel is opened, until such time as some visible impression is made on the system. Some horses will bear to lose a much larger quantity than others; without our being well able to explain the reason of the difference. In a general way, the quantity an animal can afford to lose will depend on his condition at the time; his age; and on the nature of his disease, should there happen to be any present. Horses that work hard and live well, will bear bleeding best: fat, bloated subjects, worst. Under acute inflammatory disease, especially of the brain, an animal will support the loss of a much larger quantity than if he were in health. The late much-respected Mr. Cordeaux, veterinary surgeon of the Artillery in Dublin, used to relate a case of staggers which he utterly despaired of, but which afterwards recovered, and he verily believed



did so from the accident of the pin having been rubbed off the neck in the course of the night, and given issue to a manger-full of blood, after he had himself abstracted as much as he conceived the animal would bear. Under ordinary circumstances, even of health, a gallon is reckoned a moderate bleeding: under pressing disease I occasionally myself take three gallons: I have heard of *four* being taken! By way of a rough estimate, and a sort of guide to the surgeon, a gallon of blood may be reckoned equal to the loss of about a pint in a man. Though under conditions of health and forms of disease of no great consequence, we are in the habit of prescribing so many pounds or quarts of blood to be drawn; yet, when it becomes necessary to make a sensible impression on the system, our only safe and true guide, as to quantity, is a steady observance of the effects produced on the animal as the blood flows from its vessels.

THE EFFECTS OF ABSTRACTION OF BLOOD will depend on two circumstances: on the quantity abstracted, and on the time it takes in flowing. The fuller and more rapid the stream, the greater will be the effect created by any given quantity: when we are desirous, therefore, of producing what is called "an impression on the system," and to do this at the least possible expenditure, we make a large opening into a large bloodvessel, and draw away the blood as quickly as we can. In order to know when this impression is made, we keep our fingers, during the time the blood is flowing, steadily upon the pulse, with pressure just sufficient to feel its beats distinctly; the declining force and perceptibility of which, with their subsequent total failure and simultaneous shrinking of the artery from beneath the fingers, indicate to us that the required effect is accomplished: this we call *the sinking of the pulse*. About the time that the pulse sinks or fails, the animal himself commonly evinces signs of uneasiness: he becomes restless and fidgetty; jerks his head up and down; and moves step by step backward, feeling, as it were, for support, until he has backed himself against the side or corner of the stable, where, finding a rest for his hind quarters, he becomes once more tolerably tranquil again for a time. Should the bleeding be continued beyond this (which, by the by, it ought

not to be), the respiration becomes disturbed ; the animal heaves at the flanks and puffs at the nostrils, sighing, as it were, deeply for want of breath. His strength also now begins to fail him ; his body rocks from side to side ; if he lifts a foot, he quite staggers in putting it down again : in fine, things are now arrived at that pitch that there is danger every moment of his falling headlong upon the persons about him. These symptoms of distress are quickly followed up, if not accompanied, by a profuse sweat all over the body ; and this is often succeeded by a sort of *rigor* or shivering fit. In some instances, these symptoms make their appearance some little time after the operation of bleeding is all over, and even in cases in which we hardly expected their super-vention. After the animal has been tied up for a time, on returning to him, we find him heaving and puffing, and wet with sweat. When we perceive exhaustion approaching, we may often succeed in arresting its further progress by turning the animal's head towards or (if possible) into the open air, and suffering him to drink three or four go-downs of water cold from the pump ; and with the same water afterwards sponging out his nostrils and his eyes : all which will so refresh him as probably to arrest the fainting fit altogether.

In bleeding horses that live idle and pampered lives, it not unfrequently happens that this puffing and blowing comes on even as early as during the flowing of the second or third quart of blood : when this happens, take away the blood-can, and suffer the blood in the vein to circulate for two or three minutes, by which time the animal will commonly have recovered himself. The operation may then be resumed, and the required quantity generally be obtained\*.

\* I was once summoned to attend a case of ordinary spasms of the bowels, the subject of which was lost entirely from the uncontrollable influence of *mind* or *temper* (or whatever you please to call it) over body. The dread this horse had for any thing in the shape of medicine or operation, rendered every attempt, even to the last, to administer remedies in anywise efficaciously, quite and altogether ineffectual. Although he was a subject, both from age and condition, well able to bear the loss of a large quantity of blood, yet every effort to extract more than two quarts from him (and that

VENESECTION AND ARTERIOTOMY.—Blood may be drawn either from a *vein* or from an *artery*: in the former case, the operation is called *venesection*; in the latter, *arteriotomy*. The current of blood possesses such force and rapidity in arteries, that, were we to open a large one, we should run a risk of not being able to stop it again; independently of which, they in general run deep in the body, out of our reach. The vessel we commonly open to let blood from, is the *jugular vein*; which we select as well on account of its accessibility as its large size. The place we find it most convenient to open it, is about one-third of the length of the neck from the head to the body. Not that it signifies, I believe, in a general way, from what vessel we take the blood, providing we produce the same impression. The advantages of arteriotomy over venesection may be said to be two:—the one is, where we cannot obtain the requisite quantity of blood, or that with the desired rapidity, from a vein; the other, when the artery we have in our power to bleed from happens to be the one supplying the inflamed part. In pulmonary and cerebral congestions we sometimes find it difficult to obtain blood from the jugular vein; we then have recourse to the temporal artery: though, before we do this, we may make the experiment of compressing the opposite vein, as well as the one we are bleeding from; which I have known occasionally to succeed.

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only after repeated attempts) totally failed. No sooner was he struck by the fleam—nay, hardly was his head held up for the purpose—than he was seized all over with shivering, and would commence panting at the flanks, and reel and stagger about as if gallons of blood had already flowed from him: under which sense of fear and faintness, we were compelled to desist, and subsequently relinquish the intended detraction of blood, pin the neck up, and release him again. In the course of a few minutes all trembling would subside, and the symptoms of gripes (which were not very violent) would be renewed. In the same manner was I foiled in every subsequent attempt at phlebotomy. The administration of medicine he obstinately opposed. A ball he would not and could not be made to swallow; and he employed seven men in forcing liquid into his stomach: but although the latter was accomplished, the efforts at repulsion were such, that no benefit seemed to be derived from it. In fact, this animal, strange as it may appear, died a martyr against the cause of physic.

In cases of staggers we bleed from this artery with seeming advantage, in consequence of its proximity to the brain.

LOCAL BLEEDING consists either in drawing the blood directly out of the inflamed part itself, or from some vessel or place near enough to it to have the same effect. Surgeons apply leeches and cupping-glasses with this view : but these are means of little practical service to the veterinarian ; in fact, they are not worth his notice. Our only effectual modes of letting blood locally, consist in *scarifications*, and in opening vessels, either arteries or veins, in the vicinity of, or connected with, the part in a state of inflammation. In ophthalmia, we occasionally scarify the external parts of the eye with advantage ; and we reap decided benefit, in cases of acute foot-lameness, from bleeding in the toe. In violent sprains of the back sinews, it is an excellent practice to take away blood from the plate-vein. Local bleedings may be practised in cases where general ones are not called for, or when general bleeding has already been carried to the extent the system will bear : in no case of importance or danger, however, can they or ought they alone to be trusted to ; for though we may succeed in drawing so much blood out of the diseased part, that the inflammation becomes evidently diminished, yet will the blood speedily return into its vessels, and reproduce all the prior vascular repletion. The object is, not only to unload the vessels of the inflamed part, but at the same time to weaken the power that is forcing blood into them : unless you do this, you do no good ; and this is the reason why general bleeding is so very preferable to any local evacuation. The most efficacious and desirable mode, of all, of taking blood, is that which combines the local effect with the general : it is not always that we have an opportunity of uniting these advantages ; when we have, it ought never to be neglected. When any disease is going on in the fore foot or leg requiring general depletion, we should take the blood from the plate-vein in preference to the jugular. Sometimes the jugular itself becomes a channel of local draft ; as in cases of inflammation of the brain and eyes.

WHEN BLEEDING IS REQUIRED.—In all cases of active disease affecting organs of importance, such as the brain, the

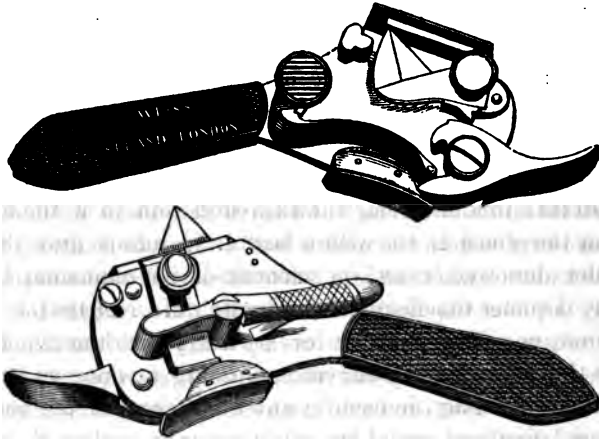
lungs, the bowels, the urinary and generative organs, the eye, &c., it becomes our duty to arrest the progress of inflammation with all possible dispatch; not only that we may save the animal's life, but that we may prevent those changes of structure taking place which tend to reduce him to a state of unsoundness, and too often permanently so. Whenever the inflammation is of the acute character, we should invariably let the blood flow, without any reference as to quantity, until we have made a sensible impression on the system; and should this not sufficiently abate the violence of the disease, we must do so a second and even a third time. Should the inflammatory action decline into the subacute or chronic kind, or even assume this type from the beginning, I have generally found a repetition of small bleedings, at short intervals, of more effect than such large emissions as I would practise during the acute stage. Sometimes bleeding is requisite to prevent disease. A horse falls backward, and receives violent concussion from the poll of his head, being the part dashed against the ground. The next day, or the day afterwards, he is dull and stupid, and, perhaps, a little off his feed. Such a horse should be largely bled, in order, if possible, to prevent an accession of brain-fever; which we know, from experience, is so likely to supervene upon an accident of this nature. It is a common practice to bleed horses that are in health; or that have not, at least, any disease on them that calls for it. Either the groom or his master, in their sapience, conceives that the horse requires bleeding, and it is done; and, fortunately for them and their victim, no great harm follows the deprivation. The animal will soon regain the blood taken from him. Should the practice be pursued, as it is, I believe, in some studs, spring and fall, its continuance afterwards will be apt to become necessary for preserving the health of the animal. Bleeding is by no means to be recommended as a mode of reducing the flesh of animals: although it may weaken and even emaciate for a time, yet on its discontinuance will the animal rapidly grow fat again. Indeed, it often increases the animal's disposition to get fat; as butchers and farmers well know who bleed their fattening calves.

THE INSTRUMENTS USED FOR BLEEDING are the *fleam* and the *lancet*. In ordinary jugular venesection, the fleam is the best instrument; so far, at least, as their relative efficacy is concerned: in regard to the convenience of the operator, the lancet is to be preferred. But the lancet is not to be managed to produce effect equal to that of the fleam: the instantaneous impulsion the latter receives from the bloodstick, causes it to penetrate simultaneously the skin and vein in a manner we rarely or never can effect with a lancet. I admit that the lancet is the more *gentlemanly* or scientific-like instrument; but for efficacy, I prefer the fleam and bloodstick. Not that I would by any means discountenance or lay aside the lancet. In private practice, it is highly convenient, being at once so portable and so simple. And, indeed, in any other parts of the body but the neck, the fleam and bloodstick prove so awkward to use, that the lancet becomes almost absolutely necessary to supply their place. This is the case with the plate and femoral veins. Also, in arteriotomy, the lancet is preferable to the fleam.

I cannot dismiss this part of my subject without noticing a very ingenious, and, I may add, efficacious instrument for bleeding horses and cattle, contrived by Mr. Weiss, the surgical instrument-maker, in the Strand. Some few years back I drew his attention to this subject, at the same time impressing on his mind the practical value of our clumsy combination of fleam and bloodstick. At first, he did all in his power to imitate this by machinery. However, it at length struck him, that he might obtain every advantage by proceeding on another principle—on that of a *revolving* fleam: and in this, I may say, he has succeeded to admiration.

The annexed engraving conveys a very good idea of the construction of this instrument.

Weiss' Patent Fleam.



**TREATMENT AFTER BLEEDING.**—The required quantity of blood being drawn, the orifice is to be closed by accurately approximating the lips of the wound, and inserting a pin, in a transverse direction, through their middle, around which is to be twisted some tow drawn into the form of a small rope or skein. The pinning-up finished, and the blood sponged from the neck, let the horse's head (unless it happen that illness plead against such confinement), be kept racked up for at least one hour. This maintained elevation of the head gives the blood free current to the heart, and prevents any swelling or *thrombus*—arising from its extravasation—which it is that forms the commencement of what is called a *bad neck*.

#### PURGING.

Purging constitutes the most powerful means we possess, in the shape of medicine, of reducing inflammation. It is a remedy to which we have almost universal recourse; one which everybody employs without apprehension of danger, and, generally speaking, with salutary consequences. In fact, of such immense importance and value is this operation to us in veterinary medicine, that, had we no means of purging the animal, our art

would not be worth practising: so insignificant are all our other medicinal agents when put in comparison with purgatives.

A PURGE ACTS, first, by causing an expulsion of the contents of the bowels; secondly, by determining blood to those parts; and, thirdly, by withdrawing more or less of that blood from the system. The medicine we are in the habit of administering to horses to purge them, is *aloes*; and the mode in which it acts to take this effect, is, as far as we can discover, the following:—in the stomach, the aloetic ball undergoes solution, and is no sooner dissolved, than, on account of its obnoxiousness, it probably becomes expelled and gradually diffused over the intestinal canal, mingling more or less perfectly with the alimentary matters therein, and irritating and stimulating, wherever it goes, the membrane lining the canal; whose surface (considering the length and circular form of the intestinal tubes) must be one of very great spread and extent, and is, as we know, everywhere pervaded by capillary vessels. The effects of this stimulation are threefold. It causes a determination of blood to the bowels, whereby a plethoric or congestive state of their lining membrane is produced. This is followed by an augmented flow of their juices or secretions, as well as those, probably, of the liver and pancreas; which accounts for the liquidity and copiousness of the evacuations. At the same time, the intestines are excited to increased peristaltic action; and this accounts for the frequency of the evacuations.

PURGING RELIEVES INFLAMMATION, therefore, by drawing away blood from the part inflamed (as well as from others) to the multitudinous capillary system of the bowels; by lessening the actual quantity of blood circulating in the system, by as much of it as passes off in the form of secretion from the extensive surface of the intestinal canal, and consequently diminishing that in the inflamed part; and, at the same time, by ridding the bowels of their contents, from a surcharge or the insalubrity of which the inflammation may either be in a measure sustained, or, indeed, may happen to owe its origin. There is another way, though an indirect one, in which purging tends to abate inflammation. It hurries the alimentary matters through the intesti-



nal canal before time has been allowed to extract the nutriment from them; and during its operation generally creates that nausea of stomach that disposes the animal either to loathe his food altogether, or else to take it in but sparing quantities: in both which ways a purge operates towards depressing the powers of the general system, and, in common with others, those of the part or organ in a state of inflammation.

**PURGES IN DISEASE.**—With two or three notable exceptions, purges are proper in all cases of fever or constitutional inflammation; and, generally speaking, in such local inflammatory diseases as affect the animal constitutionally. One of these exceptions is *inflammation of the lungs*: in that disorder (contrary to what is the case in human medicine), experience shews that purging is improper—that it is, in fact, highly dangerous practice. Another case in which purging is contra-indicated, as well almost by common sense as by medical experience, is scouring—*diarrhœa* or *dysentery*, as we medically phrase it: even in this instance, however, there are certain stages or forms of the disorder in which purgative medicine exerts a beneficial operation. In all cases of stoppage or constipation of the bowels, and in inflammation of the brain, which is commonly attended with torpor and obstinate costiveness, purgatives, and potent ones, are especially called for. In cutaneous affections, we often exhibit purges, there being great sympathy between the skin and the organs of digestion. We also occasionally administer . . .

**PURGES IN HEALTH.**—When a horse returns from grass into the stable, the common custom is to give him three “doses of physic:” the multifarious object of which is, in the language of the groom, *to cleanse him; to get up his belly; to pull off his fat or grossness; to fine his coat; to set him thriving*: and, at the same time, *to keep down humours*; all which conduces to bring about that desirable state of aptitude for bodily labour, called, in sportsman’s phraseology, *condition*. In this case, the simplest operation of the purge, is, to rid the bowels of their grassy contents, and thus prepare them for the reception of food of a more nutritive and less voluminous character; which accounts, in some measure, for the reduction of the belly. A se-

condary effect of the operation of purging, is, that by the evacuation the absorbent system is roused to increased action, and sets about removing that fat which had been formed and laid up while the animal was at grass, but which now is regarded as grossness and cumbersomeness. Another tendency purging has, is, to rectify any disorder or derangement there may be in the digestive organs, and thus not only improve the thriving aptitude of the animal, but at the same time have an effect, through the sympathy existing between the organs, in ameliorating the condition of the skin, and thereby rendering the coat smoother and more glossy in its aspect. Withal, purgatives will tend to keep down the plethora and inflammatory habit necessarily consequent on the nutritive and heating provender of the stable, especially after a long continuance on grass diet; and, therefore, under these circumstances must be regarded in the light of veritable and truly valuable prophylactics.

**PURGATIVE MEDICINES.**—Though there are several medicines in the pharmacopeia possessing cathartic properties, there is but one in common or general use amongst us; and that one is

**ALOES.**—Of aloes there are two kinds, *Cape* and *Barbadoes*; and much difference of opinion has taken place among veterinarians in respect to their relative properties of activity, strength, or efficaciousness. It is now, I believe, pretty generally acknowledged that Barbadoes aloes is *stronger* than Cape: though I admit this, however, I must say, I believe the one equally as efficacious as the other; and this I say, although I, myself, am at present in the practice of using the Barbadoes.

The following simple formula I find to answer every purpose, whether we use Cape or Barbadoes aloes:—

Take of Aloes (either Cape or Barbadoes).....	℥ij
Soft soap . . . . .	℥j

After having broken the aloes into small pieces, melt these ingredients together over a slow fire, and, as they dissolve, stir them well into each other; allowing them to remain on the fire and simmer gently until such time as both are incorporated into

a smooth uniform mass. An ounce of oil of juniper or caraway, or any other essential oil, may be added, at the pleasure of the compounder, during the time that the composition is in a state of liquidation.

THE COMMON DOSE admits of graduation from half an ounce to an ounce, according to the size, age, condition, and apparent strength or constitution of the horse. A large bulky horse, of the cart-horse breed, will, in general, require more than one of the hackney or hunter description. A great deal will depend on the condition in which the animal happens to be at the time: a horse that is full of hard meat and at hard work, will always take a drachm more than one that is kept pampered and idle in the stable, and two drachms more than a poor horse, or one that is come recently from grass. Peculiarity of constitution is also of importance to be attended to, whenever we possess means of getting the information. Professor Coleman, in his lectures, mentions a horse of his own that required no more than *three* drachms of *Cape* aloes to purge him: in opposition to which I may set the case of a thorough-bred filly, the property of Mr. O'Conner, veterinary surgeon, at Newmarket, who took, under every advantage of preparation, *fourteen* drachms of *Barbadoes* aloes to produce purging. In prescribing the dose, in cases of sickness, much of course will depend on the nature, and violence, and stage of the disease for which we are about to administer the purgative medicine. In cases of obstruction in the bowels, or obstinate constipation; and also in brain affections, in which there is often considerable torpor of the bowels; we shall find we have occasion, if we would insure any effect, to exhibit much larger doses than we are in the habit of doing in health, or under ordinary circumstances: ten, twelve, and fourteen drachms, and even doses so large as two ounces, are, now and then, requisite in such cases.

LAXATIVE is the term we have in use to denote that effect produced by aloes, or any other purgative, short of actual purgation. In a state of health, the dung is voided by the animal in solid conical divisions, we call *balls* or *dungballs*; under the operation of a purge, the excrement is discharged in a liquid

state, one hardly more consistent than water ; while the effect of a *laxative* is to render it of a consistence intermediate between these two conditions—what is called a *pultaceous* state—one in which it falls *en masse*, or resembles cow-dung. To produce such an effect, we commonly give three, or four, or five drachms of aloes, according to circumstances. And, now and then, we find it necessary to repeat either the same dose or a diminished one, as the case happens to require, the second or third day afterwards.

**PREPARATION FOR A PURGE.**—When it is our intention to exhibit a dose of purgative medicine with full effect to a horse in health, or even to one in disease, providing his malady be nowise pressing for the immediate administration of the medicine, we generally, what is called, “prepare” him, or rather his bowels, for its reception and operation. The object of this preparation is, that there should be as little alimentary matter as possible in the bowels to interfere with the action of the purge, and that what food is introduced should be of itself of a character tending to laxity. The substitution of bran-mash for oats answers this purpose very well, and the directions I am in the habit of giving are as follow :—The horse to be deprived of hay the evening before, giving the physic, and to have, in lieu thereof, a double or treble feed of bran-mash. The physic to be given the next morning after the animal has been watered, but prior, at least an hour, to his being fed again with bran-mash ; no hay being allowed him until mid-day : after which he may be fed in the usual manner with bran-mash and hay. The next morning, early, he should be allowed to drink his fill of chill-off water\*, and afterwards be taken out and exercised for an hour and a half or two hours ; during which time he may, if he will drink, be watered a second or even a third time. On his return to the stable, he may have a bran-mash ; of which his food should, indeed, principally consist. After having rested for a couple of hours, the exercise must be repeated ; and this time, after having been walked for about half an hour, he must, if required, be

\* Water that has stood all night in the stable.

slowly trotted for some time, tepid water being given at intervals in any quantity he will drink. Should his bowels prove obstinate, towards the latter part of the day, the rule in exercise is, that it may be carried to any extent short of sweating the animal. In the summer, there is no objection to green meat being fed on during the operation of physic. In the winter, the animal will require extra warm clothing. By a judicious regulation of the exercise and the watering, we may mostly produce either a brisk or a tardy purgative effect, according as we desire. On the third day, commonly, "the physic sets;" that is, the dung grows consistent again, and falls, first, in masses, afterwards in soft balls. So that, in a general way, three days are occupied by the operation of a dose of physic: on the first, it is administered; on the second, it works; on the third, it sets.

THE TARDY ACTION OF ALOES seems to be the only room we have for complaint against them; and that is certainly, in some instances, one of serious moment. In a general way, we never look for their operation under four-and-twenty hours; before which time our patient, suffering from some acute affection, may be past recovery, or even dead. Hence it comes, that bleeding, which can be done at once, and as soon as done takes effect, possesses, as a remedy for acute inflammation, such an advantage, at the outset, over purgation; although the latter is in its way highly beneficial when it has once come into full operation. There is often very great and remarkable difference, however, in the length of time aloes takes to come into operation: sometimes the horse will purge on the evening of the same day on which the ball is given, while cases do occur in which it takes two or three days to produce any effect. I have known a dose of physic remain sixty hours before it operated, and keep the horse nearly the whole time in a state of distressful nausea. This shews the impolicy, and danger even, of administering a second dose of physic at an interval less than three or four days after the first, supposing the latter not to have taken effect: nothing would warrant such practice but urgent disease.

In cases in which a speedy purgative effect is of very great moment, we may give the *aloetic drink* in lieu of the ball, and promote its operation by frequent injections *per anum*.

Take of Aloes (roughly powdered) .....	℥ss
Subcarbonate of potass .....	℥j
Gum Acacia (powdered) .....	℥j

Mix together, and add

Boiling water .....	℔j
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If required to be kept for any time, add spirits of wine . . ℥j.

It has been, and, indeed, still is, a great desideratum with us to discover a purge of quicker operation than aloes; and we may say we have, in a measure, succeeded: I am sorry to be forced to add, however, that our success has been of that ambiguous character that we dare not, to any extent, avail ourselves of it in practice.

**OILY PURGES.**—*Castor oil* has been both recommended and discommended: some declaring it to be highly efficacious and useful, while others have denied to it any effect beyond that of so much common or sweet oil. In the course of my own experiments with it, I have purged a horse by a pint and a half *seven* hours after its administration. Another, to whom I gave a pint, did not purge for *four-and-thirty* hours afterwards; but manifested during the time symptoms which gave us sufficient cause for alarm, lest an attack of inflammation of the bowels might supervene. To a third, I gave a pint and a half of the oil *without effect*. To say the least of it, therefore, castor oil is extremely uncertain in its operation; and, in my opinion, not free from dangerous consequences: so that, for my own part, I would not exhibit it, but by way of experiment. *Linseed oil* seems to me to be more potent than castor oil. It is, however, equally uncertain in its operation: added to which, I should say, it cannot be administered without leaving us in a state of apprehension in regard to the consequences. *Common olive oil* is, perhaps, the only one we can exhibit without fear of danger: but then, its power is weak, and its efficacy uncertain.

**CALOMEL**, in large doses, will purge: but its operation is liable to be attended with such symptoms of disordered bowels as will little incline us to repeat the experiment. Even a half-

ounce dose is not to be risked. In doses of half a drachm and a drachm, we give it occasionally in combination with aloes, whose operation it renders brisker and more impressive. By itself in such doses I am in the habit of giving it, in one disease in particular, with peculiarly good effect: but then it has no purgative operation on the bowels.

CROTON SEED is a purgative of recent introduction into veterinary practice, and one of whose use I am able to speak in a more satisfactory manner than I have been of the preceding. It appears that, in India, where the croton tree is cultivated on account of its cathartic qualities, both the wood and seeds are medicinally used: in this country the seeds only are exhibited. Mr. Hodgson, V. S. to the Company's artillery, informed me, that the natives are in the habit of roasting the seeds; a process found to render them less acrid, and milder in their operation; and that a celebrated physician of his acquaintance in India, is in the habit of prescribing a seed so prepared in combination with six grains of calomel, to be made into four pills, two to be given at bed-time, and the remaining two twelve hours afterwards, unless the bowels be opened by the first dose. Mr. Hodgson made some experiments with the roasted seeds on horses. He found their operation tardy, and, in some measure, uncertain; though, when it did take place, very violent. The croton seed, in the dried state in which it is imported, is about the size and shape of a tick bean, and of a dark brown colour. When split open, it will be found to exhibit a strong capsule, inclosing a yellow, soft, oleaginous kernel; and between the two a light-coloured pellicle adhering to both, but most intimately to the latter, apparently through the intervention of a furfuraceous volatile powder, which is very apt to fly up into one's eyes and mouth in the act of splitting the capsule, and occasion considerable irritation. The kernel itself is composed of an oil mostly separable by expression, making up about one-fifth of its weight, and of a farinaceous residue, constituting the remaining four-fifths. The latter becomes caked by expression, and requires trituration; after which it comes presented to us in the form of a light brown oleaginous powder or *farina*; and this it is that we at present use in veterinary medicine.

*The expressed oil* is used in human medicine as a highly powerful drastic purge. It has been on several occasions employed in veterinary practice ; but I believe no longer continues to be (unless by way of experiment) on account both of the uncertainty of its operation, and of its extreme violence when it does act. I reckon an average dose to a horse to be about forty drops. I once gave a drachm ; from which the horse became violently purged twenty-four hours afterwards.

*The farina* appears the preferable form for the exhibition of croton. Deprived of its oil, it seems to have lost much of its acidity and virulence ; and comes to us as a purgative, if not more certain, at least with less risk or danger in its operation. Indeed, some practitioners are in the habit of prescribing this in preference to aloes : for my own part, I seldom give it unless it be to horses that are jaw-locked, or that are very troublesome in taking balls ; it being on those occasions a matter of so much convenience to have a small powder which one can introduce into the stomach either through the medium of a bran-mash, or a pail of water. The warmest advocate in its praise I happen to know is Mr. W. Chadwick, V. S. Hot Wells. In a communication he sent last year (1832) to "*The Veterinarian*," he informs us, that when sent to for a dose of physic, he "always makes up a croton ball ;" and that he considers five grains equal to a drachm of aloes : a proportion which, I believe, is now pretty universally admitted among veterinarians. The average dose, therefore, may be rated at from thirty to forty grains. In opposition, however, to this very favourable report of Mr. Chadwick's, it is my duty to state, that, with other practitioners, fatal cases have occurred from the exhibition of croton. Mr. Cartwright, who is well known to the readers of "*The Veterinarian*," and not less on account of the number than the practical worth of his communications, relates† a fatal occurrence in the case of a pony which he attended for an inflamed eye. He gave the little animal 25 grains of croton seeds (not the *farina*), which operated the following day, and continued purging it, at intervals, for the three successive days, when it died with symptoms

\* Vol. v, p. 21.

† In "*The Veterinarian*," vol. i, p. 233.



of a very ambiguous character. The cæcum and colon were found studded with ulceration. It appears, therefore, pretty well established, that the *farina*, or meal from which the oil has been extracted, is the preferable preparation of croton : indeed, it would seem, that it was almost the only one whose operation is divested of danger ; a circumstance that appears to be owing to the absence of the oil.

CONCLUDING OBSERVATIONS.—After all, for general use and unvarying efficacy, we possess no purge equal to *aloës*. It is the one I have returned to myself, after trial of all the others ; and though I have not *banished* croton from my pharmacy, yet to the bottle containing it I seldom have recourse, unless it be (as I before stated) in a case in which it is either difficult, or dangerous, or impossible, to administer a ball. Independently of this consideration (unless it be in price) I do not know any advantage possessed by croton over *aloës*. It requires quite as great a length of interval, or even greater, before it operates ; and when it does come into operation, it appears to be less certain in its effects, and in their duration, and altogether less under our control, than *aloës* : added to which, it is more likely to disagree with the bowels.

### SEDATIVES.

It is a law in the animal economy, that whatever excites nausea of stomach or a sense of sickness, at the same time causes the pulse to fail both in frequency and force ; and, on this principle, we give nauseating medicines for the abatement of inflammation. By diminishing the action of the vascular system, particularly after we have drawn blood, we very successfully combat inflammatory disorders : in fact, it is not possible for inflammation to proceed with any degree of virulence so long as the powers of the heart and arteries are kept in a state of depression by nausea. And in consequence of medicines that nauseate having this lowering or sedative effect, they have got to be classed among others which are in their operation direct *sedatives*.

**NAUSEATING MEDICINES.**—Valuable as *aloes* is as a purgative, it is no less valuable as a nauseant and sedative. In doses of half a drachm or a drachm, repeated every four, eight, twelve, or twenty-four hours, as the case may be, *aloes* keeps up a sort of continued nausea, and, at the same time, augments the secretion from the bowels to that degree that a constant drain is maintained from the system. After we have met the first attack of inflammation by bleeding and purging, and the physic is about setting, we most opportunely and efficaciously administer these small doses of *aloes*; combining them with other kinds of medicine or not, as the case may seem to require.

**HELLEBORE** is another nauseant, and a very potent and influential one. The root of white hellebore I have now for many years been in the habit of prescribing with very great effect as a nauseant and sedative, and especially in diseases of the chest; in some of which, from the apprehension of inducing purging, we durst not give *aloes*. In doses of a scruple or half a drachm, repeated every four, six, or eight hours, it nauseates or sickens the animal, and lowers the pulse with more effect than *aloes*, and, at the same time, exerts a peculiar depressing influence on the entire system, and thereby on any great action, such as inflammation, there may be at the time going on in it. In large doses, hellebore becomes a poison to the animal; on which account, even in the quantities we ordinarily prescribe, its operation requires watching. It is, therefore, not a medicine proper for exhibition in the hands of unprofessional persons, or one that we can safely ourselves exhibit, unless the patient be situated immediately under our eye: when that is the case, we have nothing to fear. The pulse of itself will almost always prove a sufficient index to us of the medicine coming into operation; in addition to which, when sickness is approaching, the animal will become dull, and hang his head low or under the manger, and, perhaps, at the same time, slaver more or less at the mouth. In some instances this slaving is accompanied by a champing or grinding motion of the jaws; or protrusion of the muzzle and eversion of the upper lip. This is the signal for discontinuing the hellebore. Should it be persisted in after these warnings, it will

produce efforts to vomit, and, probably, occasion some irritation in the bowels, such as may alarm us, though we need apprehend no dangerous consequences unless the medicine have been exhibited in improper doses, or in doses carried to an improper extremity. The time for its exhibition is after due impression has been made by the use of the fleam.

**SEDATIVE MEDICINES.**—Although nauseants have the effect of sedatives, that effect is but an *indirect* or secondary one: let us now inquire if we possess any medicine of a *direct* sedative nature—any one that acts directly and exclusively on the nervous system—that assuages or composes, without at the same time having a weakening or destructive tendency. We believe the increased vascular action, constituting inflammation, to be much under the influence of nervous irritation: consequently, if we can allay or anywise diminish this irritation, we shall produce more or less effect in lowering or quieting the vascular action.

**DIGITALIS** has considerable effect in reducing the force and quickness of the pulse; and it appears to exert this influence through its sedative or narcotic action on the nervous system. In doses from half a drachm to a drachm twice or thrice a-day, administered after the first or second impressive bloodletting, it often exerts considerable effect in diminishing the pulse: rendering it, generally, at the same time, intermittent. Like hellebore, however, it requires to be watched, as well as to be given under the direction of a professional man; being in itself of a poisonous nature. In over-doses, or in doses continued after the warning we receive from the pulse to suspend its administration, it produces great depression of the whole system: sinking the pulse down to a state of imperceptibility at the jaw, and inducing great irregularity, discoverable at the heart. Accompanying this depression, we have deathly coldness of the extremities; lividity of the membrane of the nose; a cold and clammy condition of the mouth; stupor, vertigo, and unsteadiness of limb; trembling; convulsions; death. I do not regard it as so influential in abating inflammation as hellebore; though there be those that are of a different opinion. However, I make a practice of exhibiting it in cases in which hellebore seems to do harm

by irritating the bowels—already, perhaps in a state of disorder. The following formula will serve either for one or the other:—

Take either of Powdered white hellebore root.... 3ss  
 Or, of Powdered digitalis..... 3ss  
 Licorice powder ..... 3ss  
 Syrup or treacle sufficient to make a ball.

These doses may be diminished or augmented according to circumstances.

### DIURETICS.

DIURETICS, or *urine-balls* (as they are called by the stable-people) are medicines that have the effect of augmenting the urinary discharges. The kidneys produce the urine out of the blood circulating through their interiors; and anything that stimulates these organs to extra-operation is said to be a *diuretic*. By the performance of this function the kidneys become one of the grand emunctories of the system, eliminating fluids that would prove either redundant or obnoxious were they detained in the blood. Man, whose skin is naturally bare, and subject to the influences of climate and temperature, readily perspires; and thus not only rids his system of redundant fluid, but, at the same time, possesses this as a means of cooling his body: whereas the horse, whose skin is covered with hair, and consequently not so exposed to these influences, though he may be made through exertion to perspire, does not in common get rid of his superabundant fluids through the skin, but through the kidneys. This accounts for the comparatively greater susceptibility of the kidneys in horses than in men; and the consequently greater and more available agency of diuretic medicines. The physician, when he is called to a case of fever, prescribes with no less beneficial than certain effect, his *diaphoretics*—medicines that throw his patient into a kindly perspiration, and thus carry off the fever. The veterinary surgeon possesses no such medicinal power; at least not any that he can place reliance on: there is no medicine that will produce *diaphoresis* or actual sweating in a horse. In making this assertion, I am quite alive

to the diaphoretic properties ascribed by some of our best authorities to *antimony* ; and, so far as creating (with the aid of clothing) a *determination* to the skin, I am quite ready to go along with them in opinion : but I must repeat my disbelief of the existence of any medicine able to produce *actual diaphoresis* or sweating. Some give *nitrous æther* to act as a diaphoretic. I myself have often thought that hellebore has manifested that tendency. However, whatever may be the diaphoretic agency we possess in horses, it is not, after all that can be said in its favour, of that decided character that can be employed with any degree of confidence for the subdual of inflammation. The veterinary surgeon, therefore, is driven to the expedient of operating on the kidneys : through which channel, though we may cause an expenditure of blood, and so diminish the quantity in the system at large, yet we cannot expect to do that good which perspiration from so large and extensive a surface as the skin, must and does effect. In fact, diuresis is not an operation we employ for the abatement of inflammation, so much as for the mitigation or removal of its consequences. In the acute stages of inflammation, I do not think we do much good by the use of diuretic medicines ; and none whatever, I should say, during the action of purgatives : it is at the time that inflammation (where it has been acute) is on the decline, and effusion is taking place, or, indeed, where it has been chronic from the beginning with a tendency to effusion, that diuretics prove so serviceable.

DIURETIC SUBSTANCES.—Many medicines, and some descriptions of provender even, prove diuretic to the horse. Mowburnt hay, foxy oats, and all sorts of high-dried and over-fermented provender, are apt to have a diuretic effect on horses unaccustomed to them ; and this it is that forms the great objection to their use : nothing tending to debilitate a horse more than frequent or long-continued excitation of the kidneys. In the exhibition of diuretic medicines, we are required to be more attentive to the doses in which we give them, and the intervals at which we repeat them, than to the individual selection of them. The neutral salts, *nitre* in particular ; the alkalies, uncombined or as they exist in *soap* ; the balsams, especially that of *copaiba* ;

the *turpentine*s in a remarkable degree; *Spanish flies* in a violent degree; *savin*; *nitrous æther*; and others; all come into the catalogue of diuretics. Mercury and digitalis likewise possess this property.

*Diuretic Balls.*

No. 1.

Take of Flowers of sulphur ..... 3ss  
Venice turpentine, sufficient to form a ball.

No. 2.

Take of Powdered resin ..... 3ss  
Soft soap, sufficient to form a ball.

No. 3.

Take of Powdered nitre ..... 3ss  
Syrup or treacle, sufficient to form a ball.

No. 4.

Take of Venice turpentine  
Castile soap ..... of each 3ij  
Powdered aniseed, sufficient to form a ball.

For general purposes, I do not know that it matters much which of the above recipes we make use of for our diuretic. In cases where we want to produce the greatest possible effect, we must vary the ball from time to time. Sometimes we shall find one answer; sometimes, another: most cases require a change.

SEDATIVES AND DIURETICS are often very usefully combined. When the inflammation is of that kind that tends to dropsical effusion, and, at the same time, still evinces considerable activity, while we endeavour to abate action (after bleeding or purging, or both, as the case may be) by sedative medicine, we exhibit, in combination with it, diuretic medicine, choosing that which will chemically accord with the other, and which likewise seems best adapted to the nature of the case.

*Sedative and Diuretic Balls.*

Take of White hellebore root ..... 3ss  
Resin ..... 3ij  
Soft soap, sufficient to form a ball.

Take of Digitalis .....	3j
Nitre.....	3ij
Venice turpentine, sufficient to form a ball.	

These balls may be given once, twice, or thrice a-day, according as the case may seem to require: in fact, the diuretic ingredients in nowise affect the exhibition of the sedative, the latter being the one whose effects will most demand our vigilance.

THE MODE OF OPERATION of a diuretic, and the way in which it tends to relieve or remove the consequences of inflammation, is, seemingly, by abstracting from the circulating blood its serous or aqueous parts, and thereby creating a sort of demand in the system for more; which, in its turn, acts as a stimulus to the absorbents to take up any effused, superfluous, or redundant matters, wherever in the body they are to be found. A horse is brought to us for *swelled legs*. We prescribe a diuretic ball for him, and direct that he should be walked out twice a-day. His legs in the course of a day or two become fine again. The groom reports that the animal has staled more and oftener than ordinary; by which augmentation in the secretion of urine the absorbents have been set to work, and have removed the serous and lymphatic matters that caused the tumour in the legs. On the other hand, the presence of aqueous or other redundant fluid matters in the blood, may of itself prove a stimulant to the kidneys, and increase their action: this happens when a horse drinks a great deal more than ordinarily; hence *water* is said to be a diuretic. The same thing also takes place when the absorbents, from any other cause than the one just stated, are roused to inordinate operation: hence it comes, that such medicines as stimulate the absorbent system are said to be, at the same time, diuretics; in which class we reckon *mercury* and *digitalis*.

#### ALTERATIVES.

*Alterative* or *alterant* (from the Latin verb, *altero*, to change or alter), though a term in frequent use amongst medical men, is one which appears to admit of some considerable latitude of con-

struction. If we consult the dictionaries for a definition, we shall find that an alterative is a remedy that works some beneficial *alteration* in the system without occasioning any sensible evacuation, or, indeed, operation, barring that which it has on the condition of body for which it is given. A *specific* is a remedy that is infallible in the cure of some one disease in particular: whereas an alterative is used where no determinate disease exists, but yet where the general system is evidently labouring under some embarrassment or derangement which operates against the performance of its functions in a correct or healthy manner. Whatever the cause of this unhealthiness be—whether it be in the digestion, the blood, or any where else—the alterative is supposed to correct or remove it, and to do this without creating any sensible evacuation, or, indeed, disturbance of any kind in the body; for, should the remedy purge the animal, or sensibly increase his flow of urine, or bile, or saliva, or any other secretion, it would no longer be accounted an alterative.

ALOES, ANTIMONY, NITRE, AND MERCURY, are the medicines most commonly given to horses as alteratives. Aloes is our common *purge*; antimony is supposed to be a *diaphoretic*; nitre is a *diuretic*, and mercury increases the flow of bile, and in particular that of saliva: hence we come to discover, that alteratives form no distinct class of medicines of themselves, but are, on the contrary, derived from most, if not all, of the other classes. This, at least, goes to shew, that the alterative effect (whatever it may be) is brought about in a variety of ways; for, notwithstanding that, as alteratives, they are given in diminished or divided doses, still their effects will always be correspondent with their intrinsic virtues, however much they may in *degree* turn out different: by which I mean to say, that a purgative will, as an alterative, have a different action on the body from a diuretic as an alterative; a diuretic from a diaphoretic; a diaphoretic from either a purge or a diuretic; whereas, so extensive is the action of mercury in the system, that, while it differs in its mode of operation from all three of the alteratives just named, it in a measure resembles them all from combining their properties, to a greater or less degree, within itself.



ALOE, then, is exhibited in veterinary medicine with one of three objects in view—either as a *purge*, in doses of six, seven, and eight drachms ; or as a *laxative*, in doses of two, three, and four drachms ; or as an *alterative*, in doses of half a drachm or a drachm : in fact, we give aloes in the same doses either as a nauseant or sedative, and as an alterative; the one being the proximate or immediate effect of the medicine—that which it takes on the stomach ; the other, the remote effect—that which it takes on the constitution at large, and which requires time for its accomplishment. To set about to explain how aloes or any other reputed alterative produces all the good ascribed to it, is not within our power in the present state of knowledge: we may, however, approach nearer to this in the case of aloes than, perhaps, most other of the alteratives ; for we all know that aloes possesses the property, when administered in small doses, and they continued for a time, of correcting or improving the functions of digestion ; a change that must, in all cases, be followed by a proportionate alteration for the better throughout the system. The gentle stimulation kept up by small doses of aloes within the bowels, increases the peristaltic action, at the same time that it produces a slow drain from them which Mr. Abernethy regards as one of “ morbid secretions\*.” In addition to its action on the stomach and intestines, aloes operates on the liver, augmenting the flow of bile ; and also on the kidneys, producing more urine than ordinary. Still, all these effects are produced, in a manner, imperceptibly or unconsciously to the patient or the observer ; and therefore it is that aloes, in this reduced form, comes under the denomination of an alterative. In cases of chronic inflammation, alterative doses of aloes are often highly beneficial.

ANTIMONY.—I have already expressed my doubts on the asserted diaphoretic virtues of this mineral—at least, that it (or, indeed, any other medicine we possess) has the power of producing actual sweating. It, however, stands high, particularly among our sporting gentry, as an alterative. Our admirable

\* In his work “On the Constitutional Origin and Treatment of Local Diseases.”

sporting writer, Nimrod, in his "Letters" thus alludes to it,—  
"Without the use of alterative medicines, exclusively of physic, no hunter can be got into blooming condition; that is to say, to look well in his skin, to dry immediately after a sweat, and to be in full vigour of body. Of these medicines there are several sorts in use; but the diuretic and diaphoretic are, in my opinion, the best—antimony forms the principal." It is a curious fact, that antimony, which (in the form of tartar emetic) produces when rubbed upon the skin so much irritation and inflammation, fails to produce any very decided effect when taken into the stomach: at least, the efficacy we are in the habit of ascribing to antimony, as an inward remedy, is, in the doses we usually exhibit, rather gratuitous, I am inclined to think, than demonstrative. It requires very large doses to make any sensible impression; and even in them, I have never, I repeat, witnessed an instance of actual *diaphoresis*. My father, many years ago, experimented on two horses doomed to be shot for glanders, though otherwise in good health. He commenced with administering an ounce of crude antimony to each horse, morning and evening, augmenting the dose until the fourteenth day, when each began taking four ounces thrice a-day, which both continued for seven days afterwards. During this time, they voided their urine largely, lost their appetite, and fell away in condition: on discontinuing the medicine, however, they began to recover their appetite, and with it their condition, and soon looked as well as ever. In twenty days, each horse had consumed eight pounds twelve ounces of the mineral! As far, therefore, as regards its action on the *skin*, the alterative virtues of antimony appear of an extremely doubtful character.

NITRE is a remedy of such general use, especially among sportsmen and their grooms, and one to which such various beneficial effects are ascribed, that it would amount almost to heresy to say anything against it. "Nitre," says Nimrod, "has been much used by grooms as a cooling diuretic, and a preventive of disease from such causes; but it must be borne in mind, that nitre is a strong *repellent*, and of a *debilitating* nature." From the place which nitre, as a *neutral salt*, occupies in human me-

dicine as a *cooler*, or refrigerant and febrifuge remedy, it has obtained a somewhat similar reputation in veterinary medicine, though there is much less reason for ascribing such properties to it. The chief end we have in view when we employ it, is its *diuretic* effect; though there can be no doubt but that it augments other secretions besides the urinary—perhaps, in some degree those of the bowels. So far it is useful as an adjunct or secondary sort of remedy in inflammation; and so far it may be ranked among febrifuges and alteratives. It is a remedy we could do very well without; at the same time, one that, since we are in possession of it, we can find uses for.

MERCURY, however, after all, is the remedy that nearest approaches to the true nature of an alterative; at the same time that it best deserves, on account of efficacy, the name of one. It works good in the animal's constitution we know not how—it is, in fact, a veritable alterative: it brings about a beneficial alteration in the system without creating any evacuation or operation of which either ourselves or our patients appear to be conscious. At least, it does all this when given in small doses, as an *alterative*. In large doses, it will purge the horse. In doses short of producing purgation, continued for any length of time, it will prove *sialogogue*—render the animal's mouth sore, and produce salivation; and to such a degree, that the animal will become unable to masticate his food, and will either *cud* it and throw it out of his mouth, or refuse it altogether: an effect that may, by persistence in the use of the mercury, be carried so far as even to starve the horse to death from want of food.

### LOCAL REMEDIES FOR INFLAMMATION

Are employed either by themselves, or else in conjunction with general ones. When the inflammation is but trifling or unimportant in degree, and superficial in its seat, we may trust the cure to local means alone: it is not often, however, that this is the case; or, at least, it is but seldom, even in slight local inflammations, that we do not give physic, which is at once introducing *general* treatment. On most occasions, when both ge-

neral and local treatment are employed, the latter is but secondary or auxiliary to the former: but, now and then it happens, that the local agents become the principal ones. These remedies are, *local bleeding*; *cold* and *warm applications*, and *counter-irritants of every description*.

Of local bloodletting I have already spoken. Let us therefore proceed to the consideration of

### COLD AND WARM APPLICATIONS.

COLD seems to be the natural remedy for a disease consisting in a superabundance of heat: at all events, we know it to be one very grateful to the feelings of our patient; and on that account alone does it deserve our attention. Any application to an inflamed part much lower in temperature than the part itself, affords relief, on the common principle of the *abstraction of heat*: in addition to which, cold has a *sedative effect*, lowering the excited action of the vessels, and, at the same time, bracing them to that degree that their canals become considerably diminished. This may be carried so far as to suppress the inflammatory action altogether—nay, even to the extinction of the vitality of the part. In common, we use *cold water*, or salt and water, for this purpose. We dip a bandage in water, and roll it round the part; or we lay a piece of linen, wetted and folded, immediately upon the part: the abstraction of heat depending not so much on the actual coldness of the water itself as on the evaporation that takes place from the surface—evaporation being the greatest and most permanent source of cold. Though we may with advantage, when it can be procured, reduce the temperature of the water by the addition of *ice* or *snow*; or even apply ice itself to the inflamed part—powdering it first, and confining it by means of a linen bag.

GOULARD'S LOTION (as it is called, from the person who first introduced it, and attributed to it *sedative* properties on account of the lead it contains) is frequently used by us in place of water: I believe I may unhesitatingly say, however—unless it be in the case of ophthalmia—with no sort of advantage It may be

## 128 EVAPORATING LOTIONS—WARM APPLICATIONS.

made either with the sugar of lead, or with the extract of Goulard, after the following manner:—

### *For a Quart of Goulard's Lotion.*

Take of Sugar of lead .....	3ss
Vinegar.....	3ij
Water (soft).....	℥ij

Finely pulverize the sugar of lead; titurate it well with the vinegar; afterwards add the water.

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Take of Goulard's extract .....	3j
Water.....	℥ij

Mix together by shaking the bottle well.

EVAPORATING LOTIONS are the most convenient means we possess for producing cold, and, after all, perhaps, the most effectual. Vinegar and water, in the proportion of one part to three; or spirits of wine (or rum or brandy) and water, in the same proportions, will answer this purpose very well. Sometimes we add three or four ounces of spirits of wine to the quart of Goulard's lotion, and thus render that evaporating. In cases of sprains, or where there exists much subcutaneous swelling, and we require something repellent or discutient, as well as evaporating, we are in the habit of using the following:—

### *Discutient Lotions.*

Take of Sal ammoniac ... ..	3j
Vinegar.....	3iv
Spirits of wine .....	3iv
Water .....	℥iiss

Mix together the sal ammoniac and the vinegar, and add the spirits and water.

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Take of The liquor of acetated ammonia	
Spirits of wine .....	of each 3iv
Water .....	℥ij

Mix together.

WARM APPLICATIONS, strange as it may appear, in some cases answer better than cold ones. Indeed, that we should, in the treatment of inflammation, “blow hot and cold,” as it were, “with the same breath,” cannot fail to strike any one but a me—

dical man with some sort of surprise\*: nevertheless, there are cases that do best in one way, and cases that do best in the other; and as this is a knowledge we can gain but from experience, and one that is apt to fluctuate with circumstances, it is not always in our power to say which of these modes of treatment we ought to pursue. Cold, to be of service, must be applied at once upon the part inflamed, or within its immediate vicinity: whereas heat will, on occasions, do good, though applied at some distance from the part affected. When heat is used to inflamed parts themselves, it must be in combination with moisture; otherwise it will do harm instead of good.

FOMENTATIONS AND POULTICES open the pores of the skin and draw a copious perspiration through them, which tends very much to relieve the distended vessels, and thus abate the inflammation. To reap full benefit from fomentations requires a steady perseverance in their use, which, in private practice, it is often very difficult to secure: either the part should, if possible, be for hours immersed in water as warm as the hand of the attendant can bear it, and the temperature of the water kept up all the time; or cloths, constantly renewed, should be dipped in the water and applied to the part. In cases of recent injury, or where there is violent inflammation present, it is really quite surprising what relief may be afforded simply by the use of warm water: not in the slovenly and heedless way in which it is but too often employed; but by a fomentation unremittingly persisted in for hours and hours together, with an abundance of water whose temperature is steadily kept up to the point required. Poultices are made by pouring boiling water upon bran

\* A private gentleman came to me one day, requesting I would look at a horse of his standing opposite to ——— barracks. I found his horse lame from superficial inflammation about the pasterns of the near fore leg, caused, evidently, by external injury. After a time, I discovered that a veterinary surgeon was already in attendance, and that the gentleman was very desirous to make out a charge of culpability against him for having used *cold* applications, and especially as I happened to seem to confirm it by recommending *warm* ones. I told him that “*either warm or cold* might answer the purpose;” which, I believe, settled the question in his mind that I knew little or nothing about the affair at all!

or linseed meal, or upon a mixture of both, stirring the bran or meal all the while, to prevent the mass being lumpy. As soon as made they ought to be applied. In some cases—in particular in catarrh, sore throat, and strangles—great benefit is effected by the employment of steam as a fomentation to the inflamed parts. Now and then the parts may with advantage be immersed in hot bran or meal of any sort. In fact, this, like other principles, being once understood, its application and modification become easily intelligible.

### COUNTER-IRRITANTS.

COUNTER-IRRITATION is a principle extensively practised for the cure of inflammation and its various products. It means the same as *counter-disease*, that is, the instituting of one disease to cure another—the artificial production of inflammation in some part of minor importance, with a view of mitigating or drawing out entirely the inflammation we have got to treat. Counter-irritants, consequently, differ from the local remedies we have just been considering, in the respect that they are not applicable to the inflamed part itself: although, as we shall find hereafter, they are commonly used to the same parts when once the inflammation has left them. That accurate observer and eminent surgeon, John Hunter, found it was a law in the animal economy, that no two great operations could go on in the system at the same time; in confirmation of which we have only to refer to our daily practice. Do we not find that inflammation existing in the lungs either very much abates or entirely subsides whenever fever in the feet supervenes? And that an attack of inflammation of the lungs will supersede a common catarrh? On the principle of one disease curing another, then, is it that we proceed when we employ counter-irritation; although limits are necessarily set in practice to the prosecution of this object, lest we do even more harm by way of remedy than would result from the original disorder. The counter-irritants we are in the habit of employing are *blisters, rowels, setons, and firing*.

## BLISTERS.

For general use and effect, we possess no counter-irritant equal to a *blister*. While it irritates and inflames the skin, and thereby causes a sort of *revulsion* of the inflammation from the part diseased, it induces an issue of serous fluid from the surface of the true skin, which collects underneath the outer or scarf skin, elevating it into *vesicles* or little bladders.

Blisters exert a more spreading action and influence than other counter-irritants; their operation is more superficial; and the discharge they create is more abundant. There is a great variety of other substances which, when applied or rubbed upon the skin, act as irritants or excitants; in fact, we may trace them upwards, in point of effect, from the *rubefacient* or simplest irritant to the *escharotic* or *caustic*; and some of them will blister the skin, while others will bring forth pimples or *pustules* upon its surface: others, again, have no other effect than that of producing simple irritation, or dry and angry inflammation. For the purpose of *blistering* the skin, there is no substance equivalent in power and effect to *cantharides* or *Spanish flies*; the same that forms or ought to form the base of all our blisters: though I believe *euphorbium* and other cheaper drugs to be by the shops often substituted for them. The surest way of proceeding is to make our own blister; and the best recipe for this purpose I ever met with, is the following:—

RECIPE FOR A BLISTER.—Take of Spanish flies, a quarter of a pound; bruise them in a mortar; and then mix them in a glazed pipkin with a pint of linseed oil. Set the mixture upon a slow fire, and watch for its boiling; which done, suffer it to simmer gently for the space of ten minutes, and the blister is made: at least, all that remains to be done, is to strain it. With this, any effect, as a blister, may be produced. According as little or much is rubbed in, so will prove the strength of it; or the *liniment* (as I call it) may be still further lowered by the addition of linseed or common oil: the latter, perhaps, for this purpose is preferable, linseed oil being of itself an irritant to the



## 132 BLISTER OINTMENT—OTHER BLISTERS.

skin. There are several other forms, however, in which the flies are compounded into blisters :—

### *Blistering Infusion.*

Take of Bruised flies . . . . . ℥ss  
 Boiling water . . . . . ℔iiss  
 Macerate in a covered vessel until cold ; then strain and add ℥ss of spirits of wine.

### *Blistering Ointment.*

Take of Flies, finely powdered . . . . . ℥ss  
 Adhesive plaster . . . . . ℥iv  
 Hog's lard . . . . . ℔j  
 Melt the plaster and lard together over a slow fire ; and when they are completely dissolved and mixed, and the mixture has afterwards been allowed to become nearly cold, stir in the powdered flies.

### *Blistering Tinctures.*

If we would have such a preparation as “ Leeming's Essence,” as it is called, we have nothing more to do than to steep an ounce of bruised flies in eight ounces of spirits of wine or the same quantity of distilled vinegar, in a well-corked or stopper bottle for a fortnight, and then strain the mixture ; or, if we would prefer it perfectly bright, filter it through blotting paper. This makes a clean and elegant sort of application, which many prefer to the turbid or coarser preparations. A very useful tincture for immediate and highly irritative effect is made by substituting *spirits of turpentine* for the spirits of wine.

OTHER BLISTERS.—In point of efficacy, as I said before, none can compare with cantharides. But then they require six hours to produce effect ; and this, in pressing cases, is a long interval. We, therefore, occasionally employ boiling water, with a view of speedy operation ; and sometimes it seems, so far, to succeed tolerably well. It is not a practice, however, that I can recommend—at least only in cases of urgency : for, after all, it is inferior in vesicatory powers to the common blister ; though, as I heard a professional friend of mine say the other day, “ there are those who *scald* for every disorder :” perhaps it may be, because they find flies rather an expensive article. Some use *euphorbium* in place of flies, or in combination with them : it possesses no one advantage, however, over them in either

form; on the contrary, it irritates and annoys without blistering anything like so kindly and beneficially as cantharides. An old remedy as a blister, and one that, in indolent and callous swellings, now and then answers our purpose very well (though it possesses no advantage that I know of over cantharides) is *oil of thyme*—the *oleum origanum* of the old school of farriery. For curbs and sprains of all sorts it was once held in great estimation. A little of it added to the blistering liniment will serve to impart a scent to the latter. Turpentine of all sorts stimulate, and irritate, and annoy, and harass the animal exceedingly: but they do not blister. In fine, we possess nothing that blisters so certainly and effectually as Spanish flies.

**APPLICATION OF BLISTERS.**—In order to give full effect to a blister, the hair should be closely clipped or shorn off the part to which it is intended to be applied. Not that this is necessary on all occasions; for often we can accomplish all we desire by what is called *sweating* the part; by which is meant, applying only such quantity or strength of blister as will act mildly and produce simply a serous oozing from the surface, without tending to a separation of the outer from the inner skin. In human medicine it is a common practice to “keep the blister open:” that is to say, to dress the denuded surface of the sensitive skin with some irritative ointments—such as *savin*—in order to continue the inflammation in it, and thereby cause an issue of purulent matter from its pores. The same practice may be, and, indeed, occasionally is, pursued in horses: but, for my own part, I in general give the preference to a repetition of blisters—allowing one to subside, and then applying a fresh one.

**USE OF BLISTERS.**—The benefit derived from a blister depends on its suitable and seasonable application. In cases of acute disease, in which the constitution is involved, were we to apply blisters during the rise or raging of the inflammation, we should do harm instead of good, by adding to the irritation already so prevalent over every part of the system: we, therefore, never think of ordering a blister until such time as the inflammatory action has received a manifest check or abatement from the

employment of some of the foregoing remedies. We must first, by bleeding, and purging, and sedatives, according as the case may appear to need, sensibly diminish the force, if not the frequency also, of the morbid vascular action—make an evident impression on the pulse, as well as on the symptoms of vehemence in the inflamed part itself; and having done this, we may have recourse to blisters. Indeed, in some cases, it would be useless to employ them before this is done; for every one in practice knows that blisters often will really not act at all during the height of the inflammatory paroxysm: hence we always regard it as a good omen when they do draw well.

FOR THE EFFECTS OF INFLAMMATION.—Blisters are also used for the reduction or removal of swellings or enlargements, the consequences of inflammation. But in these cases their use is forbidden, so long as the inflammatory action continues. And yet, by their application we renew it: but then, the latter is of a superficial and transitory description, and such as, during and after its decline, proves a stimulus to the operations of the absorbents; which is the object we have in view for the reduction of the tumour.

STIMULATING APPLICATIONS.—By which we understand such as create irritation of the skin without actually raising vesicles or blisters upon its surface. Cantharides themselves, as well as every other blister, may, by dilution, be converted into a simple *stimulant* or *irritant*. Water may be heated to a degree to scald without occasioning blisters. Ammonia in a concentrated form will blister, though it is commonly used (in combination with oil) but as a stimulant. There are some applications, however, whose nature, though stimulating to the highest degree, is not such as will blister. The turpentine, mustard, tartarized antimony, and diluted or weakened escharotics have this character. It used to be the practice to employ turpentine applications to the skin for the purpose of producing counter-irritation: they are, however, found to occasion so much excitement in the nervous system, that they appear to be productive rather of harm than good. Mustard has no such spreading irritative

influence ; its action is more local ; at the same time it possesses the power of making an impression in cases where hardly anything else will act, on which account we occasionally avail ourselves of its potency. We sometimes use it as a counter-irritant in cases where blisters fail or are objectionable. Probably the most useful of all these applications, however, is the tartarized antimony ointment, which is made as follows :—

Take of Tartarized antimony .....	3j
Hog's lard .....	3j

Triturate well together.

Both scent and colour may be given to the ointment by the addition of a drachm of the compound tincture of Lavender ; and thus an elegant sort of compound made for the use of those who pin their faith upon appearances. About a drachm of this rubbed daily into any callous indurated swelling or place where we wish to create irritation, will often be found highly advantageous. It produces by repetition small pimples or pustules upon the skin, swells the parts, and will, if continued, occasion the skin to peel off.

### ROWELS AND SETONS.

These are but different modes of employing *counter-irritation* : the principle is still *revulsion* and *derivation*—*drawing away the inflammation* from the part attacked, and *drawing off the blood* in the form of purulent issue. So far as regards the *principle*, we are equally borne out, whether we prescribe a blister, a rowel, or a seton ; a circumstance that goes far to reconcile the apparent differences of opinion among veterinarians, in respect to the use of these three modes of counter-irritation : it often occurring that one practitioner will order a blister in a case where another would insert a rowel or seton. After all, they are but different modes of accomplishing the same end. There is, however, this to be said in regard to their employment, that the comparatively expeditious action of a blister renders it peculiarly suitable for cases of *acute* inflammation ; whereas the tardy but permanent

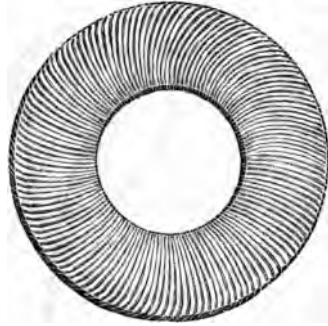
operation of the rowel and seton, fits them more especially for cases of a *chronic* character. Much idle and fruitless discussion has taken place on the comparative virtues or efficacy of blisters and rowels, and rowels and setons. Certainly, there may and do occur cases where it becomes questionable which ought to have the preference, or rather, where it is quite unimportant which we make use of: we may often do great good by combining them, or employing them in succession, or in different places. Under many forms of acute inflammation, neither rowels nor setons will take effect; we therefore use blisters in such cases, not merely from expediency, but from necessity.

THE INSERTION OF A ROWEL is an operation of great simplicity and safety. The object of practice, is, to introduce some foreign body underneath the skin, such as by its presence will occasion irritation and inflammation, and consequent formation of matter which, as it collects, will drain off through the external opening. For this purpose we commonly prepare a circular piece of leather, about the size of a crown-piece, with a large round aperture through its middle; around the margin of which, prior to its introduction, we lap a thin skein of fine tow. With a pair of rowelling scissors, we then slit the skin sufficiently to admit of the fore finger, with which, afterwards, the skin is to be detached from the subjacent parts, equally at every part of the circumference, to a sufficient extent to admit of the insertion of the piece of leather wrapped with tow. Some veterinarians—most farriers—*medicate* the tow before they insert the rowel, dip it in turpentine or blister, or some other *digestive*, as they are pleased to call it: there is no occasion for this, however, unless it be in a case in which the rowel shews no disposition to work kindly without some additional stimulus. Rowels should be turned every twelve hours; and dressed every twenty-four, in case they require it.

ROWELLING SCISSORS.

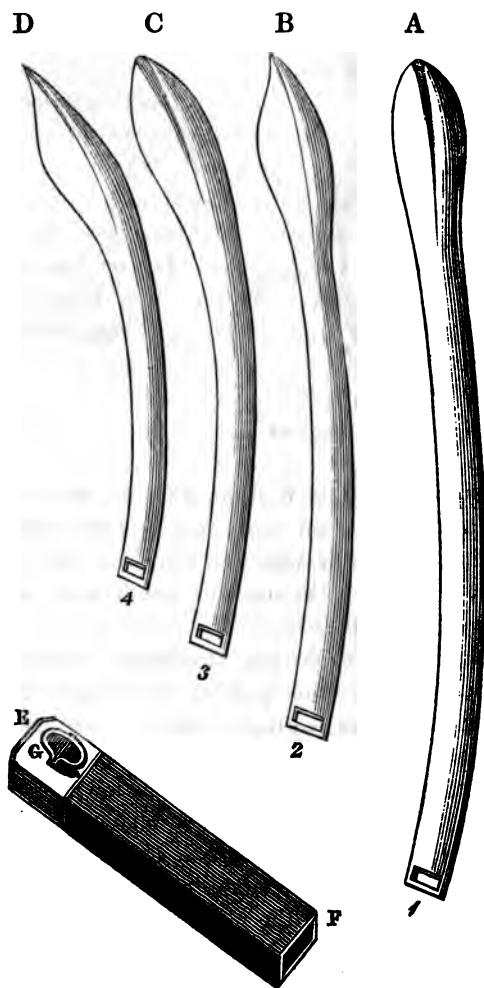


PREPARED ROWEL.



THE INSERTION OF A SETON requires more surgical skill than that of a rowel, and on that account is an operation seldom practised by the groom or farrier. For the same reason that uneducated men dare not meddle much with setons, some amongst us veterinarians seem to be over fond of having recourse to them, and to have at length persuaded ourselves that they possess, in many cases, superior efficacy, not only to rowels, but even to blisters. There is great delusion in all this. A seton is neither more nor less than a rowel in another shape, or spread over a greater extent of surface; and is no more adapted for acute disease—to take the place of a blister—than a rowel is: both being useful in their way in *chronic* cases, without possessing any very conspicuous relative advantages more than result from their individual aptitude to the place or situation where we are desirous of creating the issue. It used to be the practice to insert setons with red-hot pointed irons: this barbarity, however, has pretty generally given way to the more humane and equally efficacious method of introducing them with cutting instruments made for the purpose, called *seton-needles*, of the form of which the representation on the other side will convey sufficient idea to enable any one to purchase such as are proper, or to get them made.

## A SET OF SETON NEEDLES WITH SHIFTING HANDLE.



A B C D are four seton needles, curved for facility of introduction, with square apertures or eyes, 1 2 3 4, in their bases, through which the tape is to be passed after they have been introduced; in order that, at the time of their withdrawal, it may be carried along with the needles under the skin. A and C are

probe-pointed needles ; B and D are sharp-pointed ; E and F represent the handle to which they are all four fitted ; and into which either of them is fastened, at any part that may best suit the operator, by the screw G.

The skin should first be punctured with a lancet, which will much facilitate the subsequent insertion of the needle, whether the sharp or the blunt one be used. The latter will be found the preferable in every situation where it is possible to make way with it through the subcutaneous tissue: in fact, the sharp-pointed needles are but seldom used. It would be idle to pretend to give any specific directions for using these needles: the operation can be learnt only from actual observation. The best material for setons is the coarse brown or *beggars'* tape, as it is called; which will admit of being medicated (if thought necessary) in any manner the operator may fancy. I would warn the young practitioner against uniting the ends of the seton, making a bow of it, which, from its liability to hitch against any thing and be torn out with risk of laceration of the skin, becomes highly objectionable, and even dangerous. The ends had better be made into knots, and left hanging out of the extremities of the wound.

PLACES CONVENIENT FOR INSERTION.—Setons may be introduced almost in any part of the body: rowels, on the other hand, can be inserted but in places where the skin is loose, or separable by means of the finger from the subjacent textures. The throat, chest, belly, and thigh, are the common situations for rowels; but as for setons, we put them in the side or front of the face, the poll, the throat, any part of the neck or body, the back, the loins, the quarters, the arms, the feet, &c.

#### ACTUAL CAUTERY.

THE CAUTERY (from the Greek verb, *καίω* to burn) literally means any thing that burns. Now, in medicine, there happen to be two things employed by way of remedy that actually burn or sear the flesh of an animal: the one is a heated iron; the other any caustic chemical substance, such as unslacked lime or lunar



caustic ; and which latter, by way of distinction, is called the *potential cautery*. While there is nothing more terrific or painful in its application than a red-hot iron, its effects are, in like manner, of the most virulent and powerful description ; as a remedy, therefore, it is wisely and humanely regarded as a *dernier resort* : at least, those who employ it otherwise, until other means have been tried, would seem to be possessed of but little feeling, or else of but erroneous ideas of its operation and use. In this view it appears to have been regarded both by surgeons and veterinary surgeons of past ages. Hippocrates lays it down amongst his aphorisms, “*Quosumque morbos medicamenta non sanant, ferrum sanat ; quos ferrum non sanat, ignis sanat ; quos vero ignis non sanat, insanabiles existimare oportet.*” Lafosse, the celebrated French farrier, copying from this ancient author, says “*Ce que les medicamens ne guerissent pas, le fer le guérit ; ce que le fer ne guérit pas, le feu le guérit ; ce que le feu ne guerit pas, il faut le regarder comme incurable.*”

THE OPERATION OF THE CAUTERY will much depend on the degree to which it is heated ; in some measure, likewise, on its mode of application ; and also on the nature of the part to which it is applied. It will pain, irritate, inflame, destroy. We employ it to excite violent counter-irritation ; to destroy morbid and fungous growths ; to staunch hæmorrhage ; to score the skin, which thereby, after the consequent irritation and inflammation have ceased, contracts on the parts underneath, and operates on them with all the effects of a tight and permanent bandage. The cautery, lightly applied to the skin, will inflame and blister the surface ; impressed with more force, it will destroy the part with which it immediately comes in contact, and cause it to slough.

THE USE OF THE CAUTERY, to the credit of our art be it said, is on the decline. The farriers of former days had ever in their hands their *cauting* or firing irons : with them they opened abscesses and penetrated tumours, introduced setons, staunched hæmorrhage, cleansed sores, and scored the skin over enlargements and lamenesses of almost all descriptions : indeed, even now-a-days, we occasionally meet with some luckless wight of a

horse that has gone through this ordeal, bearing marks of having been scored over almost every joint in his body. This barbarous and unnecessary practice is, however, much diminished: the improvements of modern times have shewn us that we can, in very many of these cases, afford the same relief in a much simpler and more humane manner. I need say little more, however, on the subject here; since I shall have frequent necessity to recur to it as I proceed. Not that I am one of those squeamish or chicken-hearted mortals who would hesitate, as its medical attendant, to put an animal to any pain, short of actual torture, which I was thoroughly convinced was necessary for its cure or relief: at the same time, if I thought I could effect by mild means that for which were commonly employed harsh and painful measures, I should feel it my duty to adopt the former in preference to the latter, even though the process required a somewhat longer interval of time. In fact, I hold it up as one of the proudest boasts of modern veterinary surgery, that the red-hot iron—that terrific though potent remedy—is in many cases superseded by comparatively painless but equally efficacious measures: and let us hope the day is not far distant when we shall require its aid even less than we do at present.

### Section III.

#### FEVERS.

I. COMMON { Idiopathic. Sympathetic.		II. SPECIFIC { Influenza. Strangles.
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#### FEVER.

THE subject of *fever* has shared, in veterinary medicine, a fate somewhat similar to that of *humours*. The old works on farriery present us with copious accounts of fevers; the veterinary school in this country set out with denying their existence. I commenced practice myself with a belief that there was no such disease in horses as abstract fever; but I soon found myself compelled to alter my opinion: at least, I met with diseases which I was unable to refer to any other source or heading. And I believe I may add, that, at the present day, the revival of this doctrine is pretty general amongst veterinarians.

DERIVATION.—Our word *fever* appears to have come to us from the French word *fièvre*; for the two are very alike. The radicle is the Latin word *febris*, a noun springing from the verb *ferveo*, I am hot. In their literary origin, we discover an analogy between *fever* and *inflammation*: the latter (as before observed) being derived from *flamma*, flame; and that from the Greek verb *φλέγω*, I burn: as if the one were a *local* heat or *burning*; the other a *general* heat; which, in point of fact, is the case.

DEFINITION.—To express, in a few words, what fever really is—in what it essentially consists—seems to have puzzled medical writers as much as giving definitions of health and disease. Boerhaave, the late distinguished professor of medicine at Leyden, says, “In every fever, arising from internal causes, there is always a *shivering*, a *quick pulse*, and *heat* ;” but adds, that

“ the QUICK PULSE *alone* is present through its whole course, from the beginning to the end, and *by that only* the physician judges of the existence of fever.” The celebrated Dr. Cullen defines febrile diseases to consist in “ after shivering (or a sense of coldness), a quick pulse, increased heat, disturbance of several functions, prostration of strength.” The learned Dr. Fordyce presents us with an account of what is called an *ague*, as a specimen of what fever is. Now, an *ague* is understood to consist in a succession of stages or *fits*, as they are called ; beginning with a *cold*, advancing to a *hot*, and ending with a *sweating* fit ; which three fits are followed by intervals of ease, or *intermissions*. On this ground it is that

PROFESSOR COLEMAN appears to have based his opinion, that horses are not the subjects of fever. Of *this kind* of fever, so far as my observations have extended, they certainly are not : but then comes the question—Are we to regard this, and this alone, as the prototype of fever ? Do not both authority and observation, both in human and veterinary medicine, tend to a different conclusion ?

NATURE AND SEAT OF FEVER.—*Heat of body*, of itself, appears to have given origin to the appellation of *fever* ; the same as names of other diseases have been derived from single and prominent symptoms, without any reference to the source whence they proceeded. Medical inquiry, however, has found that the heat of the body is never augmented without being accompanied with acceleration of pulse ; and that the latter is quickly followed, if not, indeed, preceded, by derangement in the functions of organs ; for which reason these two concomitant alterations have been added to the definition of fever. But these symptoms, let it be observed, have only been allowed to constitute a fever so long as no local or determinate disease was present in the body ; for, whenever that is the case, they are said to belong to that disorder, whatever it may happen to be, and not to fever. In fine, fever is an assemblage of such symptoms without any discoverable local or organic disease to which they can be referred ; hence, some have contended, that fever had no local or particular seat or origin whatever ; while others have maintained

that, were our science perfect, it would be found to have a local habitation, the same as any other disorder. Indeed, there are those who have gone so far as to assign a seat to fever; though they have by no means agreed among themselves in opinion. Broussais, a celebrated French pathologist, derives fever from disordered stomach and bowels; while our eminent countryman, and my late instructor, Dr. Clutterbuck, with much more reason, in my humble opinion, assigns its origin to the brain. From what has been said, one would almost feel inclined to regard fever as a term under which medical men were in the habit of screening themselves from the imputation of ignorance: certain it is, that as we become more enlightened in our science, fevers seem to vanish away and diminish in number; and a day may arrive, when we shall be able to trace every disease to its source, or, in the sense in which we are now considering it, have none left that come under the denomination of abstract fever.

FEVER IN HORSES.—The questions left for our consideration, then, appear to be, whether these general indications of fever have existence in horses; and if so, whether or not they can be at all times traced to their proper or local source. That heat of body and accelerated pulse, together with the usual functional disorder attendant thereon, are to be found as well, and (making allowances for the number of their diseases) as often in horses as in men, no one will attempt to dispute: it only remains, therefore, to inquire, if these febrile symptoms in all cases admit of being referred to local or organic disease. Will anybody take on himself to say, that he never met with these symptoms but in connexion with manifest disorder of some one or other organ or part of the body in particular? I think not. On the contrary, every one must confess, that, if such constitute fever, there can be no doubt of its existence in horses; and that, so far from its being a rare or disputable case, it is one of constant daily occurrence.

KINDS OF FEVER.—The next question for our consideration is, to what kinds of fever the horse is subject. I should say, but to one *common* kind; though to two of a kind that are uncommon, or, as I have here named them, *specific*.

## COMMON FEVER.

Some denominate this affection, common *inflammatory* fever: for my own part, I think the epithet “inflammatory” may be dispensed with; it being understood that fever itself is but a general or diffuse inflammation. Common fever may exist either in an *idiopathic* or independent form—a form in which it has no local excitant; or it may be the product of some local disease or cause of irritation, in which case it is said to be *sympathetic* or *symptomatic* in its origin. A horse picks up a nail in his foot; he becomes very lame, and suffers great pain from the injury. Should the pain and irritation continue, inflammation will quickly be set up in the foot, and this will be followed by sympathetic fever in the system—by general heat of body and accelerated pulse, and all the other concomitant disturbances. On the other hand, when the same set of symptoms arise without any local injury or inflammation, the fever is called *idiopathic*. There is, in fact, no other difference between these two forms of fever, unless it be that in severe injuries and inflammations the symptomatic is disposed to run to a much higher degree than we in general find the idiopathic form attaining.

## IDIOPATHIC FEVER.

**SYMPTOMS.**—Generally speaking, I should say, that fever in horses was ushered in by a *cold fit*: by which, I do not mean actual shivering—though that is occasionally observed—but, staring of the coat, coldness of the surface of the body and extremities and mouth. At the same time the animal becomes dejected: he hangs down his head, looks dull and heavy about his eyes, and manifests considerable disinclination even to turn in his stall. After a time, the cold fit is succeeded by warmth of skin and extremities, smoothness of coat, heat and dryness of mouth, and acceleration of pulse. The appetite is lost from the beginning. The bowels are commonly in a costive condition: though he may try to dung often, he passes but little at a time, and that in hard, and small, and dark-coloured lumps. The

urinary discharges are scanty and high-coloured ; added to which, there is often present some little difficulty or pain in staling. The respiration is but seldom disturbed.

**PRECURSORY OF OTHER DISEASE.**—Though these symptoms belong to idiopathic fever, yet are they such as may usher in any local inflammatory attack : for, as Professor Thomson observes, in regard to human fever, “ as local inflammation gives rise to constitutional febrile symptoms, so idiopathic fever often gives rise to, or at least is accompanied by, local inflammatory symptoms.” It is, therefore, quite impossible for any one to say, on visiting a horse in the early stage of fever, what the case may turn out to be. Most commonly, inflammation of the lungs is the local affection into which it turns, though it may prove the forerunner of but a simple catarrh : on the other hand, it may turn even to an inflammation of the brain. An acute observer will soon detect any pathognomonic symptom that may arise, and thus become speedily informed of the drift and tendency of the case. On the other hand, should these febrile symptoms continue without signs of any organ or function in particular being disturbed, we may set the case down as one of pure or simple fever.

**CAUSES.**—Alternations of temperature are probably the most frequent. During the spring and autumnal seasons of the year, fever often becomes epidemic. Over-exertion is another cause. Horses kept in a state of plethora—in fat or high condition—may be regarded as verging on fever.

**PROGNOSIS.**—In a general way we have nothing to fear from fever in horses, so long as it retains the true idiopathic form—is unconnected with any other malady. It seldom runs high ; and in general begins to decline so soon as we have attacked it by moderate depletion.

**FEVER FROM OVER-EXERTION.**—There is, however, a form of fever (for *fever* I call it, not knowing what other name to give it), the result of *over-exertion*, which is, when the cause has been violent, of a fatal description. An over-exerted or *over-marked* horse may, on his return to the stable, have simply a fit of cold and trembling, succeeded by one of heat and febrile symptoms,

and all after a little while go off; or he may give evidence of much greater disorder, and such as, proceeding as it manifestly does from constitutional irritation, we shall find ourselves unable to quell. I will state the symptoms I have witnessed:—The animal presents a spectacle of exhaustion. He is commonly found lying down; but is easily roused up. His general despondency and tremor betray his hopeless condition. His skin is cold, perhaps bedewed with a clammy sweat. He heaves painfully at the flanks, turning his head round from time to time as though he were in some abdominal pain: an opinion in many cases favoured by the animal being extremely restless—continually up and down—and by his occasionally pawing with his fore feet. The pulse is 60 or 70; and so weak and tremulous that its beats can hardly be counted. Nothing is discharged from the bowels; nor does the animal in general stale at all. In extreme cases, the fundament is seen unclosed—nothing but a little mucous matter issuing from the bowel. Death is seldom long supervening on these symptoms. *Post-mortem* examination discloses nothing worth recounting. We call the case, death from nervous or constitutional irritation and exhaustion. It is a sort of low, nervous, irritative fever. Bleeding, I believe, does harm; and medicines I have found of little avail. I lost a horse of my own from this disease. The late Captain Harvey (well known in the Derby hunt) lost two under my care, from the same causes.

**TREATMENT.**—Could we feel assured that the case would not run on to inflammation of some important organ, we might trust the cure of fever to aperient medicine, low diet, clothing, and a loose box: there being uncertainty, however, in this, it is advisable, whenever there is much heat of body and acceleration of pulse, to draw blood, but not largely—to the amount only of three or four quarts; and not to do that until the cold fit has become succeeded by the hot or febrile one. Immediately after the bleeding, give half an ounce of purgative mass\*. Clothe the

\* The advantage of this moderate dose of purgative medicine is, that, supposing the case should turn out to be an inflammation of the lungs



animal so as to warm him; bandage his legs, should the weather prove such as to require it; and shut him up in a loose box, supplied with a pailful of water, of which he can drink at his pleasure; and feed him with bran or malt mash, and green meat, whenever the latter can be procured: either vetches, or lucern, or green clover, are very preferable under such circumstances to hay. Should the purging mass not have made any perceptible change in his dung four-and-twenty hours after it has been administered, give him the fever ball; and let it be repeated daily until such time as the dung no longer falls in lumps, but comes away *en masse*—like cows' dung. This is the point to which we are desirous to bring the bowels. It is not good practice in general to briskly purge in fever.

*Fever Mass.*

Take of Barbadoes Aloes

Tartarized Antimony ..... of each ℥ss

Powdered Nitre ..... ℥j.

Soft Soap ..... ℥j.

Melt the aloes and soap together in an iron pipkin; and when dissolved and well mixed together, pour the mixture into a mortar in which the antimony and nitre have been in the mean while well triturated and mingled together. As soon as this is done, beat the whole together, and they will form a consistent mass. For every ball, weigh six drachms of the mass.

An ordinary case of fever will require no other treatment than is here prescribed. No exercise is to be given so long as any febrile disorder remains; unless swelling of the legs should come on during convalescence, and then walking exercise in hand may become advisable. It is seldom required or indeed safe to repeat the bleeding, unless it be done very early: for now and then it happens that debility ensues, which may call for the substitution of gruel for water, and some improvement in the feeding. I am no great advocate for cordials or tonics: what I have to say on that subject, I will defer until I come to treat influenza.

(which nobody can be certain it will not), the aperient effect will not be such as to do harm. Added to which, I find laxatives, supported afterwards by febrifuges, to answer better than purges.

### SYMPATHETIC FEVER

Is characterized by the same series of phenomena as indicate idiopathic fever; only that they spring from an evident local cause of irritation, and are commonly (though, in course, that depends on the nature and intensity of the cause) exhibited with a greater degree of violence. Also, along with the constitutional or organic irritation, there is often a superadded disturbance, arising from the pain the animal experiences, which gives the fever for the time being rather an alarming character, and, indeed, in some cases operates with so much influence on the vital functions as to hurry the animal out of the world, purely from over-excitement and excessive organic action. I remember the case of a horse that had all four legs blistered at one time; in whom, as the blisters rose, sympathetic fever sprung up, and kept on increasing with the continued irritation of the blister; until, at length, it rose to such a height, that the animal died purely from pain and irritation.

**CAUSE.**—Sympathetic fever may be caused by any serious injury, or it may be the result of local inflammation. In some injuries, so great is the pain and irritation produced at once, that this fever commences even before inflammation is set up in the injured part: such is often the case in open joints and punctured wounds, more especially foot-punctures. At all events, where the injury is itself of a serious nature, or the part injured is of much importance, we may look for the rise of this fever as soon as the local inflammation has become established; and, indeed, whether the local inflammation be produced in this way, or whether it arise spontaneously, it never exists to any high degree, or in an organ of any consequence, without being attended with sympathetic fever. Inflammations of the lungs, bowels, brain, urinary organs, &c., are all thus accompanied; so that, in point of fact, every one of these diseases is resolvable into a local inflammatory affection, and a constitutional or sympathetic one; and sometimes the one will require the most of our attention, sometimes the other.

**TREATMENT.**—It would be idle to pretend to lay down any

particular directions for the treatment of sympathetic fever without being acquainted with the specific cause on which its origin or continuance is dependent; though it may be observed here that there are many cases in which it so completely outruns the local disease that gave rise to it, that it absorbs our undivided attention, without needing hardly any reference or concern as to the nature of its cause. Injuries of tendinous or fibrous textures are very apt to occasion high sympathetic fever. A horse of — died from having run a nail into the point of his frog; another, the property of a veterinary surgeon, died under my observation in consequence of being nicked: in these cases there was no possibility of arresting the progress of the fever. — In general, sympathetic fever runs much higher than idiopathic; is much more enduring or resisting; and does not evince that tendency, which the other is apt to do, to run into a state of debility. We are therefore called on to use the fleam more freely; and, in a general way, instead of simply relaxing the bowels, to make use of active purgatives. It would be useless, however, to prosecute the subject of treatment further; as, in course, every thing must depend on the circumstantial nature of the case before us.

### SPECIFIC FEVERS

Are such as arise from some special, mysterious, or unknown cause; pursue a course and manifest symptoms different from those of common fever; at the same time that they are less under the control and influence of remedies. Although ranged in one class, there exists no other identity or affinity between these disorders, save that fever forms their leading and primary symptom: each of them possessing in other respects totally distinct natures; being, in fact, a disease perfectly *sui generis*.

### INFLUENZA.

The disorder I am about to consider under this appellation, was, before the time of veterinarians, known by that of *distemper*; a name still retained among grooms, and jockeys,

and gentlemen of the sporting world in general. We professional people have incautiously introduced the technical terms, *influenza*, *epidemic*, *epizootic*, *catarrhal fever*, &c., thereby effectually puzzling our unprofessional competitors, and at the same time creating a little confusion among ourselves. In medicine, there is a vast deal "in a name;" and, for my own part, until we come to agree on some one nomenclature or other, it is my intention, in order to avoid misinterpretation, to make use of those that are the plainest and best understood.

THE SEASON OF THE YEAR is believed to have much to do with its production—indeed, some think it is caused by a something (nobody knows what) floating in the air. The Italians christened it *influenza*, because they imagined it was owing to the *influence* of the stars! Among the horses of this country, it occurs at the spring and fall of the year; more frequently and generally in the former than in the latter season. In some seasons the disorder will run through whole stables of horses; while at others it will attack them *piecemeal*, as it were, one by one, and in situations where no sort of connexion can be traced between them, any more than that of their being all in the same atmospheric locality. Some veterinarians have been led to believe—almost all grooms are of opinion—that the disease is

CONTAGIOUS: I never was that way of thinking myself—I never had sufficient reason to believe so. I therefore have on no occasions taken any pains "to prevent its spreading." Indeed, I never saw it spread in the way in which contagion would have spread.

SYMPTOMS.—Considering the disorder as the product of atmospheric influence; and considering that it attacks horses at seasons of the year when they are naturally *foggy* and weak in condition, in consequence of this being the time they are shedding their coats; and taking into this account the situation and work the animals may happen to be in at the time of attack; we shall be prepared to meet with some differences in the mode in which the disease first shews itself, and more still in the form it assumes in proceeding through its course. In its simplest or least complicated form, it bears a resemblance to common fever;

though there are still strong characteristic marks between the two. To an experienced person, the look—the very eye—of the horse at once betrays his malady: either it exhibits that peculiar, gloomy, dolorous aspect which a feeling of extreme illness and depression might be supposed to give it; or else, being itself affected by the disorder, its upper lid, instead of being simply dependent, is nearly or quite closed, while the lower one is wet from the overflowing of tears. The head rather hangs from the neck than is supported by it. The coat looks *dead*—it has lost all its shiny aspect. The extreme parts—the ears and legs—are cold; but the mouth is usually warm, dry, and feverish. The pulse is accelerated to about sixty beats in a minute. The respiration is undisturbed. The dung is voided in small quantities. The urine likewise; and now and then with apparent difficulty. And, as for appetite, the animal cannot be induced even to look at food; but despondingly averts his head after having put his nose to it when offered, as though he himself had relinquished all hope of his own recovery.

OTHER SYMPTOMS often present themselves in combination with the foregoing. Now and then the disorder is ushered in by a shivering fit, which I have known to last, on and off, for the space of twenty-four hours. Very many cases exhibit *catarrhal* symptoms: that is, the membranes of the nose and eye are highly reddened; and from the nostrils is poured, often in great abundance, a yellow viscid matter which appears to be a mixture of lymph and pus and mucus. In general, this matter is remarkable for its yellowness; though, in some cases, it turns of a greenish hue. Sore throat is also, at times, an accompaniment: indeed, the pharynx and larynx and windpipe appear, in some cases, to suffer quite the brunt of the disease. In other instances, the disorder commences with *vertigo*—the brain is attacked—and to such a degree, that when the animal is walked out he quite staggers and reels about, and can hardly keep his legs. A common accompaniment of influenza is swelled legs. In all cases, it is marked by the early and rapid supervention of debility.

SEQUELÆ.—The ordinary concomitant or consequence of influenza is disease either of the lungs, or of their investing mem-

brane, the pleura. In many of these cases, especially when they prove protracted, while we are from day to day hoping and expecting the animal will rally, the disorder has insidiously fastened on the lungs, and without our being apprized of what has happened, until all at once (as it would seem) the respiration becomes disturbed. The case is now no longer dubious in its character: but the time has gone by for any remedies to be of service. Do what we may, the animal is hurried off in a most rapid manner. And we commonly find, on examination of his dead body, that the thorax is full of water; the pleura having become the principal seat of disease. Even when all appears to be going on well, without any pulmonary attack, and the animal has recovered from all active disease, too often does it happen, especially in cases in which a catarrhal affection has been predominant, that roaring or thick wind is left as a sequel. So that, although the influenza in itself is not in general a fatal disorder, it is one, at times, attended with grievous consequences.

IN ITS NATURE it is said to be *specific*—that is, to be a disease of an uncommon or peculiar kind. And it is so considered for three reasons: 1st, Because it breaks out among numbers of horses at particular seasons of the year—spreading and raging more in some locations than in others. 2dly, Because it is less understood than diseases in general. 3dly, Because it is less under the influence or power of remedies than common fevers or inflammations are. For, after all, it is inflammatory in its nature; and, on the principles of inflammation, is most successfully treated.

TREATMENT.—Provided we are called to the case *early*, and provided the cold stage (should any have occurred) is gone by, we shall benefit the animal by taking away a moderate quantity—three, or at most four quarts—of blood. This done, administer 5 or 6 drachms of purging mass. Remove the horse into a loose box, well bedded down; clothe him warmly, according to the temperature of the season; and flannel-bandage his legs if necessary. Let him have a free, and cool, and pure atmosphere to breathe; and feed him on mashes or scalded oats, green meat, and thin water-gruel if he will drink it. Should his dung

evinced no signs of softening twenty-four hours after the administration of the ball, give him an ounce of the fever mass\*, and repeat it daily until a laxative effect is produced. The catarrhal symptoms must be met by steaming the nose twice or thrice a-day with bran in a nose-bag on which boiling water is poured; and by blisters to the throat and neck†. Whenever vertigo is present, we must use the fleam more freely, and probably shall have occasion to repeat it. We must take care, however, to draw what blood we think it requisite to abstract, *early* in the complaint: debility so soon succeeds all appearances of fever, that we often seem to wish in the sequel we had the blood again to instil into our patient.

**TONICS.**—With a view of meeting this debility, or rather to enable the patient to bear up against it, a common practice is to exhibit *tonics*, or *strengtheners*, as those who exhibit are pleased to consider them. How far we can by medicine impart strength to a body, which, though reduced by disease, is at the time free from disease, is a question that does not appear yet to have been satisfactorily answered. For my own part, I must confess myself a great sceptic in these matters. My plan is to do all in my power to remove any disease; which done, I generally find the animal's appetite by degrees returns; and that once regained, clearly enough points out to us the surest mode of recruiting the lost strength and condition of our patient. Let the granary and the field be searched for whatever may coax or charm the appetite; and let us take care that we do not pall it either by too long persistence in the same kind of food, or by giving any one kind in too great feeds, and we shall probably find we have little occasion for any further assistance from the pharmacy. Good hay, and oats, and beans, moderately and judiciously apportioned; vetches, and lucern, and green clover, when they can be obtained; and when they cannot, carrots, and parsneps, and Swedish turnips, and linseed; are all wonderfully effective when we stand in need of *real* tonic remedies.

\* See recipe for fever mass, page 148.

† For further directions, turn to the account of Catarrh.

## STRANGLES.

Though, in accordance with custom, and rather than run any risk of being found fault with for introducing new and unintelligible names into veterinary medicine, I call the disease I am about to discourse on, *strangles*; yet is it with the impression on my mind, that the term is not only an inadequate one, but one very apt to carry with it a false notion of the nature of the disorder it is meant to designate. It appears to have had its origin in times when little more was known or thought about the disease than its evident tendency to *strangle* the patient; and from generation to generation has been handed down to the present day.

"The old English term for this disease," says John Lawrence, "was the *strangullion*;" which is evidently a corrupt rendering or transmutation of the French word *étranguillon*—from the verb *étrangler*, to strangle.

MY REASON FOR CLASSING STRANGLES AMONG FEVERS, is, that I regard the fever with which it is universally acknowledged to be accompanied, not as the sympathetic or secondary disorder, but as the primary and principal one.

That accurate observer, the late and lamented Mr. Castley, V.S. in the 12th Lancers, who has left us an excellent paper on this subject (published in the third volume of *THE VETERINARIAN*, p. 426), truly remarks, that "often when a young horse is looking sickly, delicate, or thriftless, farmers or breeders will say, 'he is breeding the strangles,' or that 'strangles is hanging about him, and he will not get better until he gets over that complaint.'" The explanation of which case appears to me to be, that the animal is suffering more or less from what I would call *strangle-fever*—from a fever, the disposition and tendency of which is to produce local tumour and abscess; and most commonly in that situation—underneath the jaws—in which it has obtained the appellation of strangles.

NATURE OF STRANGLES.—Mr. Castley's paper has led me to take more extensive and somewhat different views of the subject from any I had ever entertained or heard of before. It was from perusing this and comparing the account with a retrospect of



the observations that had occurred to myself\*, that I was induced to believe not only that the abscess or local affection was but consecutive and secondary; but that, as Mr. Feron (in his Treatise on Farriery) has observed, "the swelling is not always confined under the jaw, but the animal frequently breaks out in several places of the body, and at different times, before it sinks, which renders the case more tedious and troublesome;" an observation since confirmed by the testimony of Mr. Dick, of Edinburgh, who observes in his lectures, "although the disease commonly terminates by an abscess under the jaw, yet it may, and occasionally does, give rise to collections of matter on other parts of the surface." To which I may add, that it appears in this character to answer every end it does in the form of strangles. Nay, my own observations carry me even a step beyond this; and I now begin to doubt whether any tumour or abscess at all is *absolutely necessary* to answer that end (whatever it may be) which nature has in view in subjecting young horses to the disorder. I believe most horses to have, sooner or later in life, *strangle-fever*; but I doubt that every one that has that fever has it demonstrated or accompanied by local tumour or abscess. Be this as it may, however, that the tumour happens in other parts of the body, as well as the throat, is a point Mr. Castley's three cases (to which he could have added "many others") goes far to establish; and in my mind very far, because I have now others of my own to add to them†. What inclines

\* In looking over my notes on strangles, I find the following memorandum, penned some time prior to the publication of Mr. Castley's paper:—"Cases not infrequently present themselves, in which the cellular tissue covering the parotid gland, before the root of the ear, in the hollow between the branch of the jaw and the vertebræ, becomes the seat of abscess. Is this to be considered, when alone, as the disease itself; or merely as a precursor or sequela?"

† The first case mentioned by Mr. Castley is that of a bay mare, four years old, who was admitted into hospital for "being very stiff and lame of the near hind extremity:"—"the following day a painful tumour began to make its appearance on the loose ply of skin in the flank," which grew to "the size of a cricket ball." In ten days it pointed and was opened; and then another similar one formed in the other flank; which second formation

me to think that many horses, though they may, and I believe do, undergo *the fever* of strangles, do not experience the local disease, is, in the first place, because some of those that are admitted by us to have strangles, only have it in the form of a swelling under the jaw, neither very bulky nor very sensible, and which is often resolved by a blister; and, secondly, because out of the many young three-and-four-year-old horses which have in the

it was that first fixed Mr. Castley's attention, and marked the constitutional character of the case. They were both ushered in by febrile disturbance, and each discharged about a pint of matter; after which the mare began to thrive and improve rapidly. There was no sore throat nor any catarrhal symptom. The second was the case of a brown mare who had gone through the regular strangles, and was discharged from hospital; but was re-admitted a fortnight afterwards with symptoms of internal disorder of a mysterious visceral character, of which she died on the sixth day afterwards. An abscess was found in the mesentery, which Mr. Castley "felt no hesitation in calling one of the sequelæ of strangles."

The third case was that of a bay horse, four years old, in whom four distinct formations of matter occurred:—one under the jaw; one on the right cheek; one in the near arm; one on the near quarter.

"The two last abscesses discharged a large quantity of very thick pus. Since then the horse has been advancing rapidly in convalescence."—*Veterinarian*, vol. iii, pp. 428-431.

To these I will add two cases which occurred in my own practice during the last year (1832). In July, a mare, four years old, who had been about three months out of the dealer's hands, sickened—became unthrifty, rusty in her coat, and fastidious in her appetite, and feverish. I gave her some aperient and febrifuge medicine. I had her fed on soft meat; watching her daily, to see which way the case would turn. At length, my attention was drawn to a swelling of her udder, which increased to such a size, that it appeared as if distended with milk. As soon as maturation appeared completed, I opened it, and, without exaggeration, I should say that two quarts of thick, white, well-digested pus flowed from it. The mare afterwards rapidly recovered her health and spirits, and has never ailed since.—The second is a case of more complicated (perhaps somewhat dubious) character. A four-year old mare was indisposed for some days; at length inflammation of the lungs manifested itself, which reduced her to such a state of pulmonary decline, that I had relinquished all hopes of her recovery. She did recover, however; but during her convalescence had abscesses form on the poll, withers, one elbow, and both hips, the maturation of which seemed to restore her to health.

course of years passed under my medical superintendence, I should say that not above one in four of them had undergone regular strangles, though very many of them at one time or other had sickened. I have at this present moment, in my own possession, a young horse, whom I purchased of the gentleman who bred him. He is now four and a half years old, and has never had strangles; though he has, in the course of the last winter, sickened three or four separate times. Another colt, that was purchased at the same time, and of the same person, and that is a year older than my horse, has never had strangles. When I come to turn these facts over in my mind, and compare them with the accounts of the disease transmitted by old authors of treatises on farriery\*, I can hardly reconcile the one with the other without coming to the conclusion, that strangles must be a disease of *less general occurrence than formerly*. It is, in course, to be admitted, that some of the young horses we obtain in regiments have had the disease prior to purchase: I cannot, however, bring myself to believe that this has been the case with so large a majority as I find apparently escaping it. Let other veterinarians turn their attention to these interesting points: we shall then probably, ere many

\* "The strangles," says Gibson, "has been compared by the French and other foreign writers to the small-pox in men; because to both the young are more incident, and because the strangles *never* seizes horses but once. But, however that may be, it is certain that strangles is a critical swelling, which, when it breaks and imposthumates, *discharges somewhat obnoxious to the constitutions of horses*, by which they are usually rendered more healthful than they were before." Bracken, commenting on this comparison (which is Solleysel's) satirically remarks, "that, on strict scrutiny, it will be found only flourishing on the matter, as is too commonly the practice with long-winded authors; for the strangles are produced from *catching cold*, or from what we term perspiration obstructed. Taplin, who lashes the pathology of Solleysel and Gibson in his usual unsparing style, tells us that strangles consists in the elimination from the system of an "accumulation of impurities" *imbibed with the food* in colthood; and that this "lurking viscosity is roused from its latent communication with the juices, and called into action by bringing the frame into sudden exertions and constant exercise:"—"for experience demonstrates," he continues, "that twenty horses have this distemper, after being taken to work, to every one attacked with it" in colthood.

years pass over our heads, elicit some curious if not valuable addition to our present stock of knowledge on the subject\*.

\* At the time this account of strangles was going through the press, the following valuable observations on the same subject arrived from Mr. J. M. Hales, V.S., Oswestry:—"Strangles, in its regular form, is a disease requiring little attention, and is generally considered as an affection which at least nine horses out of ten will have; yet it occasionally takes on an irregular character, becomes very troublesome to manage, and not unfrequently fatal. I do not wish to enter into any discussion as to the contagious or infectious nature of strangles; but my experience convinces me that, *when a bad sort of the complaint shews itself in a neighbourhood, the great majority of horses or colts attacked with strangles in that district, will have the disease in an irregular way.*" This is an important fact—one that would seem to indicate that atmospheric agency possessed some influence over strangles. By way of illustration, Mr. Hales continues:—"In the early part of the present summer I was attending some young horses and colts in a gentleman's stud with strangles, and there was scarcely a case that had not some anomaly about it; such as secondary abscesses forming about the throat and parotid glands, in the flank, upon the shoulder, &c. Shortly after this, the groom of Sir W. W. Wynn (who keeps his young stock in the immediate neighbourhood of the gentleman alluded to) told me that he had got the strangles shewing itself amongst his young horses and colts. I remarked that he was likely to have a troublesome job of it, for I had attended several cases in his neighbourhood, and every one had been of an irregular kind: and pretty well has my prediction been verified; for out of at least twenty cases that have occurred in this stud, not more than four or five have run their course in the regular way. In several, after the tumour between the jaws had suppurated, and the disease was apparently going off, sudden enlargements took place in the parotid glands, and about the throat; in some cases rapidly suppurating, while others, being of an indolent character, required repeated applications of liquid blister and linseed poultices to bring the abscesses to maturity. We also had cases in which abscesses formed in the flank and upon different parts of the body; and although these circumstances created a great deal of trouble, yet we only lost two; the one a pony previously broken winded, in which the secondary disorder attacked the chest: the other a case perhaps worth detailing." A curious case of *abscesses in the mesentery*, for which (being too long for insertion here) I must refer my reader to *The Veterinarian*, vol. vi, pp. 598-600. "In another case, after the usual symptoms and course of strangles were apparently got through, the colt suddenly began to reel and stagger in its gait, and shortly lost all control over the muscles of voluntary motion, and could not stand. It ate a moderate allowance of food, and did not appear to be suffering

**PECULIARITIES OF STRANGLES.**—The disease is said to resemble small-pox or measles in the circumstances of its being an eruptive fever, and one that occurs but once in the animal's lifetime: and there appears some truth in this. In my own practice (which, from having been mostly in the army, is one well calculated to throw light on this point) I do not remember to have met with any decided cases of secondary strangles, unless it be in the form of what is called *vives*: a term, grooms and farriers seem in the habit of applying to any subsequent tumour about the throat; though Gibson (who is good authority in these matters) says, that it consists in "a swelling of the glands or kernels under the ears of a horse." But there is another question for consideration. Does strangles, *in any form*, occur in *all* horses? I should answer, No! many, in my opinion, escape it.

**CONTAGIOUSNESS.**—I would omit this paragraph altogether, were it not that I feel desirous to express, as my opinion, all disbelief in the *contagiousness* of strangles. All the observation and experience I dare boast of, have confirmed me in this opinion. Of inoculation for the disease I know nothing. There are those who assert that it is in that way communicable. It may be. It is not "catching," in my firm belief\*.

**AGE AND SEASON.**—The age, and, indeed, the time at which the animal breeds this disease, will very much depend on his removal from the field to the stable; though now and then colts

much pain. After continuing in this state for a few days, the colt died, and *an abscess was found in the centre of the cerebrum*, containing a considerable quantity of pus." These form important additions to our present catalogue of curious facts connected with strangles; and, for my own part, I consider Mr. Hales entitled to our best thanks for their communication.

\* "Pour pouvoir établir une contagion vraie comme l'un des caractères de la gourme, il faudroit prouver, d'après des faits avérés, qu'elle se transmet par l'inoculation, par le contact mediat d'un sujet en proie à la maladie, ou par le contact plus éloigné d'un animal non affecté avec des objets qui ont été à l'usage d'un animal malade. Jusqu'à ce que cette demonstration de rigueur soit faite, rendue évidente, et mise hors de toute contestation, nous pensons qu'il est permis de douter du caractère contagieux de l'affection appelée gourme."—*Dict. de Médecine Vétérinaire*.

contract it at grass. Generally speaking, the third and fourth years—they being commonly the periods of domestication—are the ages at which we meet with strangles; and at the fall and spring of the year in particular: these seasons being the most variable, as well as the times at which more horses are housed than in summer and winter. A colt, bred by my father, had the disease at six months old; and the late Mr. Coward informed me, that he had observed the disease at three months after birth.

CAUSES.—Along with other inflammatory affections, we find strangles among the consequences of domestication. The seeds of disease, which we imagine to be by nature sown within the animal's body, appear by such a change to be set germinating; and the product thereof is strangles. How all this is brought about, or what is the nature or design of the disorder, we are, and probably ever shall remain, in total ignorance.

SYMPTOMS.—Strangles being set in action by the same causes that excite catarrh and other inflammatory disorders, it very often happens, that the disease is ushered in or accompanied by catarrhal symptoms; though, in other cases, we are forewarned of its approach only by the feverish and unhealthy state the animal is evidently labouring under. The horse is dull and mopish; squeamish in his appetite; coughs now and then, perhaps; his coat looks dead and rough; his skin feels tight; he is evidently unthrifty; his pulse is somewhat accelerated; his mouth has a dryness and warmth about it not altogether consistent with health. He is probably cutting his corner incisors or his tusks at the time\*.

\* I have often remarked that strangles was an accompaniment of dentition. Is there any connexion between them? Hurtrel d'Arboval has made the same observation, and does not hesitate to say there is. His words are, "C'est pendant la dentition que le cheval, pour devenir adulte, est soumis à certaines influences qui déterminent dans son économie, des mouvemens particuliers très sujets à causer un dérangement quelconque dans sa santé: c'est aussi presque toujours durant la dentition que les jeunes chevaux jettent leur gourme, et il est d'autant plus probable que la dentition est la cause de ce que se passe en eux durant ce période, que selon la facilité ou la difficulté qu'elle éprouve, la gourme est plus ou moins benigne ou grave."—He regards the disease itself as inflammation of the mucous membranes lining the guttural and aërial passages—comme "une phlegmasie catarrhale et rien autre

We hardly know what is amiss. We may suspect, from all circumstances put together, that he is "breeding the strangles." After a while we detect a tumour under the jaw, or, perhaps, two separate swellings: we then pronounce that the horse has got the strangles. In other cases there appears a discharge from the nose, reddened Schneiderian membrane, sore throat and cough; and strangles supervenes on these symptoms.

THE SUBMAXILLARY TUMOUR is often knotty and divided on its first appearance; as if the *glands* received the primary attack. Commonly, it is slow in its progress; though I have known it appear quite suddenly, and spread and enlarge with great rapidity\*. As the swelling spreads, it becomes diffused in the cellular tissue included in the space between the sides and branches of the lower jaw, involving all the subcutaneous parts contained in that interval, indiscriminately, in one uniform mass of tumefaction. While this general turgescence is going on, various parts in the immediate vicinity likewise often take on the same sympathetic action: in particular, the salivary glands—the parotid and sublingual†, the throat, the pharynx and larynx, the lining membrane of the nose, the nostrils, the sinuses, the mouth, the tongue, the cheeks, the lips: in fine, in some very violent cases, the whole head appears to be involved in one general mass of tumefaction;

chose."—Taking this simple view of it, Hurtrel d'Arboval repudiates the idea of horses having strangles *but once* in their lives. Nor does he believe that *all* horses have it: on the contrary, he tells us that there are countries where the disease is not known; and that even in them in which it is prevalent, "il est possible d'en prévenir le développement par une bonne éducation, une régime bien ordonné, des soins bien entendus, etc."—*Dictionnaire de Médecine Vétérinaire*.

This last remark might serve to explain the immunity of so many cavalry horses from the disease.

\* I remember the case of a horse, belonging to the Artillery, who, within the space of twenty-four hours, had a tumour form on the off-side of the submaxillary space to the size of a goose-egg. The animal being at the time in the infirmary for catarrh, the circumstance became accurately noted by those in attendance, as well as by myself. The tumour suppurated in the usual manner.

† For a description of these glands, see my "Anatomy of the Horse," sect. v, p. 239.

while every outlet is running over with discharge. Our patient, experiencing this violent form of the disease, is in a truly pitiable plight. While purulent matter is issuing in profusion from his swollen nostrils, and slaver foams out from between his tumefied lips, his throat and air-passages are so plugged with collections of matter, that it is quite distressing to hear the noise he makes in his painful and laboured efforts to breathe. In such a case as this there is imminent danger of suffocation; and even though we should be able to afford the animal relief, so far as his breathing is concerned, by the operation of *bronchotomy*, yet, from the pain and irritation he is suffering, added to the impossibility of his getting aliment into his stomach, must he speedily sink to rise no more. Fortunately for us, however, and still more so for our patient, it is but rarely that the disease assumes this malignant and dangerous form. In a general way, the tumour continues to augment daily, and become more prominent; feeling at first firm and resisting, but now opposing less resistance to pressure, becoming soft, afterwards tense and fluctuating, and finally *pointing*. It does not always happen, however, that the tumour suppurates, and comes to a head externally. In some cases it appears to be carried off through a sort of revulsion internally, occasioned by a catarrhal flux from the nose, in which form it is called *false* or *bastard strangles*. In other cases, it disappears without any apparent discharge or flux whatever, the tumour becoming spontaneously *resolved* or *absorbed*: an event that commonly happens, when it does take place, while the swelling is yet small, and composed of solid matters only; though it may happen even after matter is deposited. Respecting this absorption or

REPULSION OF THE TUMOUR, there is a division in the opinions of professional men: some favouring the notion handed down to us by most works on farriery, and very prevalent, even nowadays, among the gentry of the stable, viz. that, by bringing the abscess forward "somewhat obnoxious to the constitutions of young horses is discharged;" while others (among whom I must enter myself) apprehend that the same benefit is derived,

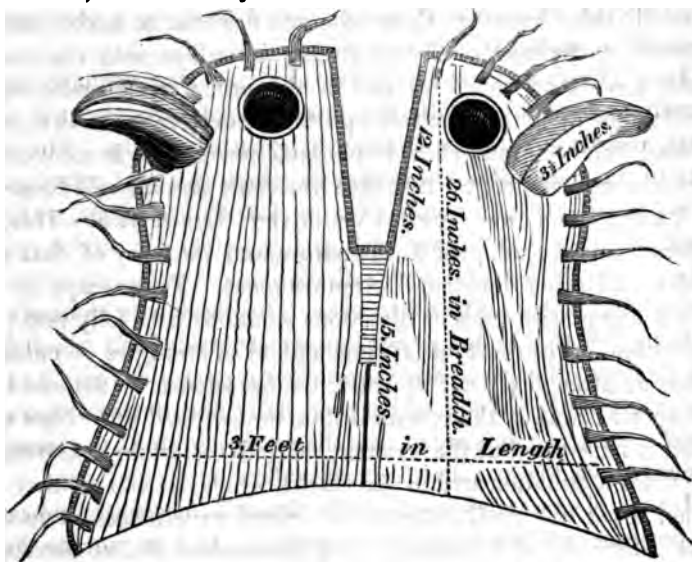


though the tumour be resolved, as when it imposts, and its contents become discharged. The former opinion appears to me not only in the light of doctrine irreconcilable with the present state of pathological science, but is one which all the observation and practice I have had, I must say, runs counter to. Indeed, so far from believing any thing of the kind, I am inclined to the opinion, that many horses escape strangles altogether. Even with those that do seem to undergo the disorder, local abscess does not invariably occur; nor, indeed, do I consider it *essential* to answer the ends of nature.

THE TREATMENT OF STRANGLES, now that we have made ourselves acquainted with the principles of inflammation and fever, will be found to be an affair of great simplicity. The nature of the constitutional disorder by which the local affection is either ushered in or accompanied, we know little about, farther than that it is best met by feeding the animal on soft or green meat, putting him in a cool well-ventilated box, clothing him, and paying attention to his bowels. Give him half an ounce of purging mass, and then wait six-and-thirty hours: should it not produce a laxative (we require not a purgative) effect, follow it up with a drachm of the mass daily until it does. Do not bleed: there is a debility at this time hanging about the animal, generally speaking, that strongly interdicts it.

LOCAL TREATMENT.—Feel the throat daily for the tumour: its presence will confirm your diagnosis. But do not be in a hurry to meddle with it. Should it progressively enlarge, it will soften, and ripen, and point without our assistance, quite as well as with it. Should it, however, manifest a sluggish disposition, rub it with some of the blistering liniment; which will either bring it forward or repel it—no very great matter which of the two results; only that the issue, being a *spontaneous* one, would probably have proved critical, and thus shortened the duration of the fever. This is the utmost that I can concede to those who are desirous for abscess. And this constitutes all that, in point of fact, is required to be done until the time comes to open the tumour.

**FOMENTATIONS AND POULTICES.**—Although I am of opinion that the case will do quite as well without these troublesome adjuncts as with them ; still, as soon as the suppurative process appears to have commenced, those who are very desirous to promote it, may make use of them. To apply a poultice with all due effect, we must be provided with what is called a *throat-poultice-cloth*. The sketch below will give sufficient notion of what it is, to enable any saddler to make one.



The *under* or *outer* surface of the cloth is here represented. It is composed of flannel, lined with serge, and bound with coarse tape. The strings for confining it are also of the same tape. There are holes in it, adapted to the animal's eyes, and cases for his ears. And when put on, the strings tie over the upper front and poll of his head, and nape of his neck. Altogether, it will be found a very useful contrivance for the application and confinement of a poultice to the throat ; and so far will prove serviceable in affections of the throat in general, and, in fact, in any disease about those parts. As soon as

THE ABSCESS POINTS, or comes to a head, open it freely with a broad-shouldered lancet ; explore its cavity gently with a

large probe, pressing its sides together at the same time with the other hand, so as effectually to rid it of any matter that may lodge in pouches or separate compartments, which is found every now and then to be the case. As for dressings, I hardly ever use any myself. After evacuating the abscess I apply fomentations and poultices, and thus encourage as much running from it as possible. And as for the healing process, that will always take place early and readily enough without any assistance from us. For all this, however, those who are desirous to make use of something by way of dressing, may introduce into the cavity some tow wound round the end of the probe, wetted with some spirituous application, either spirits of turpentine or the compound tincture of myrrh. The animal now begins to recover his appetite and vivacity. But give him time, and all will do well.

TREATMENT OF SUPPLEMENTARY DISORDER.—This, in course, must be adapted to the nature and intensity of that disorder, and other incidental circumstances. To attempt to lay down any precise rules or directions would be both folly and presumption. The most usual concomitant of strangles is catarrh. Indeed, strangles itself appears, on occasions, to assume that character; and in the catarrhal flux to run itself off. Now and then it happens that the tumour, instead of forming externally, occupies a situation within the throat, where we can neither see it nor reach it. As it enlarges the animal experiences more and more difficulty of breathing, until (becoming almost choaked) by a sudden effort to relieve himself, he bursts the abscess; and there suddenly issues from his mouth and nose a profusion of purulent matter: from this time he becomes relieved, and all does well. Any discharge, therefore, there may be from the nose, is to be encouraged; with which view, should the animal be in a state to endure the confinement of his breath, the nostrils may be steamed. In the event, however, of there being any difficulty of breathing, this is a remedy that cannot be borne. Should the case take such an unfavourable turn as (though rarely) it sometimes will, affecting so many parts and textures about the head, and causing tumefaction of them to that extent that, from pressure or obstruction, the respiratory passages with

difficulty transmit the air to and from the lungs, our treatment must be of a more active description. Should all this come on early and rapidly, we must bleed pretty freely from the neck, and purge briskly; and, at the same time, make use of unremitting fomentation. I know nothing by way of local remedy more effectual at such a crisis than *fomentation*, when the water is used at a proper temperature, and it is unweariedly persisted in. The moment we can detect any signs of the formation of matter, without (in such a case as this) waiting for complete maturation, we are to plunge our lancet into the very heart of the tumour: the evacuation of ever so little matter will afford relief. Some cases there are of this hapless turn, in which, to save the animal from suffocation, we are driven to the expedient of an operation—to the performance of bronchotomy.

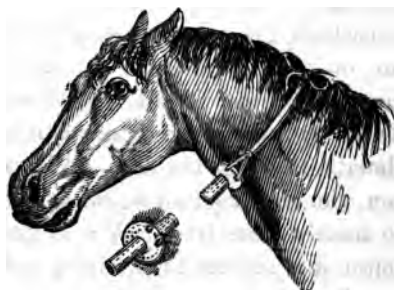
### BRONCHOTOMY

Consists in making an opening into either the larynx or the windpipe, through which the animal is enabled to breathe with ease; and is an operation practised in some cases to the saving of the animal's life, in others to the affording of him instantaneous and effectual relief, at a time when he has difficulty in drawing his breath through his nose. When the larynx is chosen for incision, the *crico-thyroid ligament*\* is the part most conveniently and readily penetrated. We in general, however, prefer the windpipe: it is nearest the surface, and an opening is made into it not only with the utmost facility, but without the possibility of doing any harm by the operation. The animal's head being kept elevated by an assistant, the windpipe may be plainly felt projecting underneath the skin, as it proceeds in its course along the anterior and inferior part of the neck. About one-third of the length of the neck from the head will be found a convenient place for operating. Make a longitudinal incision, three or four inches in extent, through the skin, and carry the point of the knife at once down to the windpipe, which must be laid bare nearly to the same extent by lateral dissection. The

\* For the situation and description of this ligament, consult my "Anatomy of the Horse," sect. iv, p. 221.

surface of the pipe being freely exposed, the point of a double-edged scalpel is to be thrust through its substance in a direction to make a cross-section of two of its rings; the object being, to excise either a square or circular portion of the substance of the tube, of about an inch in diameter. This done (in order to prevent the skin from closing over the opening, as well as the aperture itself from becoming plugged by lymph, or obstructed by secretion) it will be necessary to introduce a sort of *canula* or tube into the windpipe, and confine it there by carrying tapes or strings from it around the animal's neck. A piece of elder, about three inches in length, with a notch cut around its middle, will answer the purpose; though an ivory or bone tube with shoulders to it, and holes through the shoulders, will be found still better adapted. After the performance of the operation, and the introduction of the tube, the animal will exhibit some such appearance as under:—

## BRONCHOTOMY.



The Tube itself.

The tube will require to be taken out from time to time, and cleansed. The animal ought to be continually watched; and as he will be unable to swallow any solid food, he should be abundantly supplied with well-made water gruel, which (providing he be kept without water) he will, after a time, drink with avidity. Should the case take a favourable turn, the breathing tube is to be removed as soon as the natural passages become sufficiently cleared to carry on free respiration again. I have on two or three occasions, by the performance of this operation, saved my patients from suffocation.

## Section IV.

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### INJURIES.

WOUNDS	{	INCISED LACERATED CONTUSED PUNCTURED		INJURIES OF THE EYE		INJURIES OF THE MOUTH, TONGUE, AND JAWS.
FISTULOUS PAROTID DUCT POLL-EVIL FISTULA IN THE WITHERS SADDLE AND NAVEL GALLS				WARBLES AND SIT- FASTS INFLAMED VEIN BROKEN KNEES OPENED JOINT WOUNDED TENDONS PRICKED FOOT		TREADS AND OVER- REACHES QUITTOR FRACTURES DISLOCATIONS. BURNS AND SCALDS RABIES.

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### INJURY.

WHEN we regard the horse in the various and manifold capacities in which he in our own country is made to serve by his lord and master, man—as a racer, a hunter, a hackney, a carriage-horse, a plough-horse, a mill-horse, a bat-horse—and come to consider the numerous trials and constraints he is made, in these several situations, to undergo, and to add to them the too frequent abuses by which they are severally accompanied, we need not express surprise should we find that he is often the subject of what we comprehend, in surgical language, under the general term, “injury.” Independently of the risks and chances to which, even under the most careful guidance, he is exposed in some of these undertakings, he becomes more and more the creature of accident, from being constantly placed in the hands of those who are reckless even of their own, much more of his life; or else of such as are altogether unskilled in his subjugation and management.

KINDS.—Injuries are said to be of three kinds or descrip-

tions:—*Mechanical, chemical, and mixed.* MECHANICAL INJURIES comprehend *wounds* of all kinds, *contusions, abrasions, &c.*; also *fractures* and *dislocations*. CHEMICAL INJURIES comprise the effects of heat—*scalds* and *burns*; also the effects of various acrid and caustic substances, such as the *concentrated acids, the caustic alkalies, lunar caustic, corrosive sublimate, arsenic, &c.* MIXED INJURIES include such as are occasioned by the bites or stings of venomous animals, *mad dogs, insects, &c.* as well as such as are conveyed through the medium of inoculation.

### WOUNDS.

A wound may be defined to be, a recent breach or division of any of the soft parts of the body, occasioned on a sudden by some external cause or other.

THE KIND and extent of the wound will depend on the nature and intensity of the cause: its degree of danger will likewise depend on the cause, though more on the nature and extent of the parts divided. Wounds are said to be in kind either *incised, contused, lacerated, punctured, gun-shot, or poisoned.*

AN INCISED WOUND or *cut* of any description, is one of a kind at once the most simple and favourable that can be presented to us; and, in general, the sharper the instrument that is the occasion of it, the more disposed are the parts to unite afterwards: on which account, in the performance of surgical operations of any kind, we always use the sharpest knives, making our incisions clean, and as direct as is practicable. An incised wound is not only attended in the first instance with less danger, but in the end will heal faster than any other description of wound. It is not the kind of wound, however, with which we commonly meet in veterinary practice; though in large towns, cases of the sort do every now and then occur. I will relate one: it will probably convey more practical information than general description\*.

\* A horse, the property of the Hon. —, in turning the corner of a street in Town, came suddenly into collision with the wheel of a carriage, and the

THE PERUSAL OF THIS CASE furnishes us with a prospect of what we are to expect in the generality of such occurrences ;

consequence was an extensive incised wound of great depth, diagonally across the fleshy part of the inside of the thigh. Blood trickled freely from the wound, but not in such quantity as to excite any apprehensions on the score of hemorrhage. The animal was led into a yard hard by, and immediately cast, and the wound cleansed, for the purpose of examination, with sponge and warm water. Though the wound was deep, the principal blood-vessels had escaped injury ; therefore nothing remained, after having carefully sponged out the clotted blood, but to bring the divided sides of the skin together by suture ; after which the horse was led into a box, *but kept tied up* (lest by moving about he should disturb the wound, or get his mouth to it and gnaw the stitches), and was fed on bran-mashes alone for the remainder of that day, in order to be ready to take a strong dose of physic on the next morning, fasting. The same morning, on visiting him, I examined his pulse, and mouth, and skin, and flanks, to see if there was any fever or symptoms of irritation about him : finding, however, that there were none, and that his appetite was good, I conceived it unnecessary to bleed him, but simply ordered that he should have green meat in lieu of hay, and be kept quite quiet. In the course of the day afterwards, the physic began to operate, and continued operating all the following day. Finding, on the fourth day, that the wound was growing tumid and exceedingly tender to the touch, and that some acrid serous fluid was escaping, I hailed this as the time for the removal of the sutures ; which I effected very well as he stood (with the aid of a twitch), by dividing the stitches first with a pair of scissors, and afterwards drawing them out, one by one, with my forceps. No sooner were the lips of the wound liberated, than they receded from each other, and to a great distance, though not, perhaps, to the same extent that they would have done, had sutures not been employed : so that by their use, even here, probably something had been gained. A deep chasm was now exposed to view, whose interior exhibited a livid, sloughy aspect, and was moist with acrid serous discharge. I ordered a digestive dressing\* ; and, at the same time, directed that the animal be let loose in the box, with the reserve that he wore a *cradle*, to prevent him from licking or biting the wound. The next day there was an appearance of purulent matter around the borders : I renewed the digestive, to produce the same from the depths and recesses of the cavity. Soon afterwards, this point was gained ; and then followed the springing up of granulations. I now changed my dressing for spirituous tinctures : employing one day Friars' balsam ; another, tincture of

\* Turpentine dressings—either the *spirits of turpentine* or *turpentine ointment*, are the commonly used digestives. For my own part, I find nothing more effective in producing good laudable pus than the farriers' *black-oil*, for which the recipe will be found at page 176.



at the same time that it teaches us what steps we have commonly to pursue by way of treatment. In all wounds there are three circumstances requiring our immediate attention and consideration: the first is the

HEMORRHAGE or *Bleeding*.—In general, incised wounds bleed more freely than contused or lacerated ones; and the sharper the instrument, the cleaner the cut, the more the bleeding: the reason for which is, that wounds of the latter description are more favourable for the stagnation and clotting of the blood, as well as for the retraction of the divided arteries (from which the bleeding is mostly derived), than sharp or simple incisions are. The rapidity of the stream, and the colour or character of the blood, will at once inform us whether any vessels of size or importance are wounded. Should it come from arteries, its colour will be a bright scarlet; and its rapidity and copiousness of stream, which will exhibit a sort of *jet* or *spout* as it issues from the wound, will be in ratio with the size of the injured vessel or vessels: on the other hand, should veins furnish most of the blood that comes away, it will be of a dark purplish red colour, and flow in a continued or uninterrupted and comparatively tardy stream. When the current is evidently arterial, and of a rapidity or fulness to excite apprehensions, should we not be able to apply a compress and roller in a manner effectual for its suppression, we must lose no time either in searing (and so closing) the mouth of the bleeding vessel with the actual cautery, or else in seizing it with a pair of forceps and securing it by ligature. In the selection of these means, much must be left to the discriminative judgment of the practitioner: unless I were

myrrh and aloes; making use at the same time of powdered bark by way of an astringent and absorbent, to repress and soak up the discharges, which were now become profuse in the extreme. Every time, before dressing the wound, I had it (as well as the limb) made thoroughly clean by fomentation. The animal had but little fever during the time—none that required any thing farther than occasional laxatives, and a continuance in cooling diet; and in two months his wound was healed; and become covered over again by a contraction of the skin from each side, so that nothing ultimately remained to be seen but a *cicatrix* or scar, consisting simply in a long puckered mark or seam across the hair.

## REMOVAL OF MATTERS—CLOSING THE WOUND. 173

writing on some one particular case, it would be impossible for me to give any other than general rules of guidance. The limbs, commonly, admit of compress and roller; though the thigh and hock, and shoulder and knee, are awkward parts (from their form and the motion they possess) to bandage with much effect. In all cases the heated *budding-iron* presents itself as a ready and facile remedy for the bleeding; and (when the *skin* is not concerned) not so very painful a one as people might imagine. Though in most cases, when I could promptly get at the bleeding vessel, I would prefer the ligature, cutting but one end off, and leaving the other hanging out of the wound between the sutures.

Budding Iron.



The hemorrhage being suppressed, or else not thought of consequence enough to require checking, the next thing to be done is to

REMOVE ALL EXTRANEOUS MATTERS; such as dirt or grit of any kind, bits of stick, glass, &c. &c.; also the clots of blood in the wound. This is to be done with a soft sponge, some warm water, and a light hand. It is a necessary step towards union by the first intention: at least it is one by which we remove all causes of irritation, and therefore of suppuration; among which (as was shewn before) stagnant blood is now very properly regarded.

THE CLOSURE OF THE WOUND is the third thing required. The *surgeon* approximates the lips of a wound, and confines them in apposition by the aids of plaster and roller, and position and quietude: the *veterinary surgeon* will find that plaster will not stick upon the hairy skin of his patient; that rollers or bandages are not always applicable; and that position and quietude are too often rather “honoured in the breach than in the observance.” Though we cannot command the observance, however, it is our duty to avail ourselves both of position and

quietude to the utmost of our power. In regard to position, great advantage will often accrue in wounds of the limbs, either by raising the heel by calkins to the shoe, or by compelling the animal to place the heel flat upon the ground by putting on the long-toed shoe, accordingly as it may be the flexor or extensor muscles which we are desirous to relax or extend. This done, we find ourselves, generally speaking, compelled at once to have recourse to

SUTURES or *stitches*.—These are said, in surgery, to be of three kinds:—the *interrupted*, the *quilled*, and the *glover's suture*: to which some add a fourth, calling that the *twisted suture*. Of these the interrupted suture is almost the only one employed in veterinary practice; though I have reason to believe that the twisted one might, on some occasions, prove very serviceable. The lips of the wound being brought into contact, as nearly as possible in their natural position, a crooked needle, of *small* size, armed with strong but fine thread, waxed double, is to be carried inwards through one side of the wound, and outwards through the opposite side; but not very near the edge, lest, when the suture comes to be drawn tight, it tear out. The thread being cut off, leaving about six inches of it loose in the holes, another similar stitch is to be made at the distance of about an inch from the first; and so on until the whole extent of the wound is in this way prepared for confinement by so many distinct and separate stitches; its sides or lips being all the time held together by an assistant. The general rule is to tie the middle stitches first: this, however, is no great matter. The chief precaution required is, that they be introduced at correspondent opposite points, so that, when they come to be drawn tight, they meet each other in straight or parallel lines, and confine the sides of the wound evenly and uniformly together, without wrinkling the skin, or giving the parts any harsh or unnatural constraint. A bandage (in cases that admit of its application) will be found of service in aiding in keeping the parts together, and thus supporting the sutures. Indeed, there are cases in which the divided parts admit of sufficient confinement simply by a bandage well applied, so as not to require any sutures at all: the incisions made in the operation of neurotomy

are of this description. Prior to application, the bandage may be dipped in cold water, and wrung out: it will then serve also to keep down inflammation.

**THE TWISTED SUTURE.**—In introducing this to notice, it is not my object to recommend that known by the name to surgeons, but one similar to what we are in the habit of practising for pinning up the necks of horses after bleeding. Everybody knows how admirably this simple contrivance answers the purpose of closing the orifice made in venesection; and (borrowing the idea from this circumstance) I have found it of use in practice: indeed, in cases in which it is found sufficient to preserve apposition, I prefer it myself to any other suture.

**REMOVAL OF THE SUTURES.**—It must be borne in mind, that, although sutures are employed with a view of producing *adhesion* or *union by the first intention*, yet, being foreign or extraneous bodies, will they themselves after a time become a source of irritation, and, as such, require removal. It is true they would ulcerate their way out through the holes in the skin, were they suffered to remain: it is, however, in general, found advisable to withdraw them, which may easily be done with forceps, after first dividing them with scissors. Generally speaking, sutures should be divided and removed on the third day after their introduction: cases do occur, however, in which they are allowed with advantage to remain until the fifth and even sixth day. It is but seldom that we succeed with all our pains in accomplishing perfect adhesion. Commonly, about the third or fourth day the exterior of the wound has become tumid, stretching the stitches, between which is seen oozing some thin acrid matter, with an appearance of pus in some of the holes in the skin: this is the signal (should they not have been removed before) for the immediate withdrawal of the sutures. When union by the first intention is effected, the parts, though warmer than natural, and somewhat tumid perhaps, remain perfectly dry—free from any discharge whatever.

**THE SUTURES BEING REMOVED,** the sides of the wound, generally speaking, gape open again to a greater or less extent; and we have presented to us an open sore to heal by the tedious

processes of granulation and cicatrization. These operations of Nature must have their time: when once established, the veterinary surgeon can do little else towards promoting them, than freeing the wound from bandages and coverings of all descriptions—leaving it perfectly exposed—keeping it clean, and attending to the general health of the animal: preserving his body free from feverish irritation by food of a green or cooling description, and by occasional doses of laxative medicine. Should there, however, appear any indisposition in the wound to suppurate kindly, we may, for the purpose of correcting this, employ *digestives*, as they are called. One of the best, to my mind, is the farriers'

### *Black Oil.*

Take of Spirits of turpentine ..... 3ij  
Olive oil ..... Oj

Mix, and add six drachms of oil of vitriol; leaving the stopper out of the bottle until all the heat evolved has passed off.

As soon as a “well-digested” or “properly concocted” matter—a “laudable pus” as we moderns phrase it—makes its appearance; in other words, as soon as a healthy action (of which this is the signal) has commenced, the healing process will go on without our assistance. Our forefathers were in the habit of giving themselves great credit for *healing* these wounds: the truth, however, is, that Nature alone can perform this work; and, in general, does it best when none of our “healing” salves are obtruded in her way. In a healthy wound, we can be of little assistance, unless in case the granulations should appear over-luxuriant and rapid in their growth; and then we may besprinkle them with some dry, absorbent, innocuous powder, such as powdered bark or charcoal, or even simple flour; or, in case of their appearing pale and weakly, or sluggish in their growth, by touching their surface occasionally with some spirituous tincture or slight escharotic application: such as the *compound tincture of myrrh*, or the *tincture of benzoin*; or else a weak solution of blue or white vitriol.

## LACERATED AND CONTUSED WOUNDS

Are those in which the soft parts of the body, instead of being cut or cleanly divided, are torn or burst asunder with violence; and often, at the same time, considerably bruised. They do not, in general, look so formidable to the eye as incised wounds, owing to the hemorrhage, as well as the retraction or gaping of the divided parts, being commonly much less, though they are, in fact, of a more dangerous character. A horse is seldom lost to us (unless it happen to be from hemorrhage) from an incised wound: there are numerous instances, however, of death having followed contused and lacerated wounds, even though, to external appearance, there seemed no cause for alarm\*. Lacerations of tendinous textures, and blows or bruises upon bones, are always to be viewed with suspicion: many such injuries have turned out fatal which, in the first instance, seemed to present no cause for apprehension. Occasionally, also, we meet with contusions and lacerations of the fleshy parts of a nature truly terrific: the many and various accidents of this description that occur in large towns, and, above all, in the carriage-crowded streets of our overgrown metropolis, almost forbid any attempt at description. Into the breast of one runs the pole or shaft of some vehicle; the wheels sadly lacerate and contuse the side or hip or shoulder of another; while a third horse falls or slips down, breaking his head, and cutting open both his knees.

THE HEMORRHAGE occurring from wounds of this description is in general but inconsiderable. Indeed, it is truly astonishing to behold what extensive injuries of this kind the body will sustain without being followed by any bleeding to occasion alarm; although veins and even arteries of the first magnitude be ruptured. The arm has been torn from a man's body

\* I lost a remarkably fine horse of my own some years ago, simply from the circumstance of his breaking loose, and falling down with harness on, with the trace-hook against the point of the shoulder, bruising and lacerating the parts so much (though not penetrating the joint, or, indeed, any bursal cavity) that the limb, after the fourth day, took to swelling enormously, and the animal died from irritation and sympathetic fever.

without dangerous hemorrhage ensuing, and the man has recovered. The carotid arteries have been, one at a time, plucked from out the horse's neck, without inducing fatal hemorrhage. In some countries the castration of animals is accomplished by laying bare the testicles, and tearing them out by force from their vascular attachments to the body, without occasioning any bleeding that calls afterwards for attention. It would be easy to multiply these relations; but enough probably has been said to shew that lacerated wounds need, in a general way, not give us much cause for apprehension on the score of hemorrhage.

**TREATMENT OF LACERATED WOUNDS.**—It seldom happens that we can do much good in these cases by sutures: indeed, generally speaking, sutures, or constraint of any sort, are more likely to be productive of harm than good. The wounded surface should first be thoroughly cleansed from all extraneous matters, and afterwards, if possible, enveloped in a poultice: when a poultice cannot be applied, the parts may be kept covered with cloths dipped in some evaporating lotion\*; the object being to allay the consequent inflammation. We must be continually on the watch against the approach of sympathetic fever: in fact, when the mischief done is violent or extensive, we should at once take away a large quantity of blood, and follow that up by the administration of a brisk purge. Inordinate inflammation in and about the wound will be most effectually checked by fomentations properly persisted in, and by poultices or cold lotions in the intervals: the exposed surface will cast off a slough, after which granulations will make their appearance, and the healing process go on without interruption.

**CONTUSED WOUNDS.**—*Bruises*, as we call them, though they do not divide parts, often do considerable mischief to their structure; though not destroying, yet much disturbing and loosening the force of cohesion of the component atoms, and occasionally producing internal or interstitial hemorrhage. A bruised part is commonly very tender to the touch; and often causes, should it be in a limb, much halting in action, and in particular when the blow has been received upon a bone. Cool-

\* Refer back to the "Treatment of Inflammation."

ing or evaporating lotions may be used here. When a tumour rises from internal effusion, many prefer the discutient or sal-ammoniac lotion\*, believing that it promotes the action of the absorbents; and perhaps it does. Should there be any sign or chance of fever approaching, we must bleed without loss of time. Whether we bleed or not, however, a purge will generally prove beneficial.

**SLOUGHING.**—Occasionally parts exposed by laceration, or whose structure is destroyed by contusion, take on a sloughing action: they lose their vitality, and require to be separated from the contiguous living parts, and cast off. While this process is going on, the surface assumes an opaque, dirty, livid hue, becoming darker and darker, until it has turned in places almost black. An acrid, offensive, thin discharge exudes from the part; and the fetor is of that remarkably disgusting nature; that, once perceived, is never likely to be forgotten: in fact, before now, I have no sooner entered the gateway of a veterinary surgeon, than I have said to him, “Why, you have got a case of mortification in your stables!” A good application in such a case is *camphorated spirit*—made by dissolving two ounces of camphor in a pint of spirits of wine. Wet some soft linen cloths in this, and cover the sloughy parts with them. Poultices, when they can be applied, are of great service in these cases, as soon as the parts become dead and the process of separation has begun: they may be made either of linseed meal or oatmeal alone, or yeast may be added to set them fermenting, so that they may be applied in a state of fermentation. Carrot poultices I have known useful by way of change. When the fetor is extreme, it may be corrected by charcoal, or, better still, by that potent antiseptic—the chloride of lime. A generous diet should be allowed the animal during the changes going on in the wound; and he may be further supported, should it appear necessary, by steel, bark, bitters, &c†.

\* The recipe for which will be found at page 128.

† My predecessor in the Life Guards, Mr. Bloxham, had great faith (where tonic medicines appeared requisite) in the *sulphate of iron* given in *porter* or *stout*: he would give a drachm or more of the salt, dissolved in a pint of warm porter, twice a-day.



## PUNCTURED WOUNDS.

These differ from other wounds in their disproportionate depth compared with their breadth, and in the smallness of their external opening. Thorns, nails, pitchforks, knives, scissors, lancets, are the common instruments of their production; and in their general nature they are more or less dangerous, according to what part is punctured, and according to the depth or extent of the puncture. They are under all circumstances attended with more danger than incised wounds, and mostly than lacerations or contusions: in fact, they constitute the most perilous description of wounds we have to deal with. From the smallness and apparent insignificance of the external wound, people are apt to regard punctures as but of little importance; and therefore they continue using their horses as though nothing of the kind had happened. After a time, however, the animal falls dead lame, and is returned to his stable with a foot or leg, perhaps, in that condition in which it will require two or three months to be restored to soundness. On the pathology of these wounds Mr. Lawrence makes the following pertinent practical observations:—“When inflammation is brought on in consequence of a wound of this kind, it affects the *deep-seated* textures of the limb; hence the limb generally swells and becomes hard, the inflamed parts being confined and bound by the *faschia* which covers them. Under these circumstances, people say, ‘oh! the *faschia* is inflamed.’ It is necessary, therefore, in the treatment of a wound of this kind, to adopt those measures, in the first place, which are calculated to obviate inflammation of deep-seated parts. Although you may not know the extent to which the puncture has gone, you should treat the case as if it were one in which considerable inflammation is likely to arise, and thus you will prevent its occurrence; for if a case of this kind is neglected, the local inflammation (attended, I would add, by suppuration) often becomes very considerable\*.”

I shall now consider those injuries to which *particular* parts of the body are most subject, beginning with the head and ending with the foot.

\* In his Lectures on Surgery, in the Lancet for 1830, vol. i, p. 355.

## INJURIES OF THE EYE.

Sometimes the eye itself, more commonly the eyelid, becomes the seat of injury. If a blow be aimed at a horse's eye, so instantaneous is the sympathetic closure of the lid, that, perhaps ninety-nine times out of a hundred, the lid will receive the injury, and the eye itself escape unhurt.

Blows are very commonly received upon the *orbital process*; that being the most prominent part, and so placed as to form a sort of barrier or protection to the eye. Here, therefore, we look in general for the marks of the blow. In a case of this description, the upper lid is more or less swollen, and there is commensurate inability to elevate the lid; so that half or more of the *cornea* remains covered. The ball of the eye is rarely or never injured: though in cases where there exists much inflammation the conjunctive membrane commonly partakes of it; for we mostly find it redder than usual. This blow or hurt, and tumefied eyelid consequent on it, forms in general a very simple case; one that requires nothing more by way of remedy than cold water and a dose of purgative medicine. Procure the coldest water possible; wet a thin linen cloth, fold it and lay it upon the swollen lid; or sponge the lid as often as it becomes dry. Simple water in such a case as this is preferable to Goulard or evaporating lotions; the latter being liable to irritate or annoy the eye. Should the inflammation and swelling run high, take a gallon of blood from that side of the neck, and repeat it if necessary; and substitute constant fomentation for the refrigerant applications.

LACERATION OF THE EYELID is an accident that now and then presents itself. The upper lid, commonly, gets torn from being struck or hitched against some nail or hook in the stall. A horse is very apt to do this in catching up his head during the time of feeding, when there are any half-driven nails about the head-boarding of the stall. I have had three or four cases of this kind. I remember the accident happening to a hunter of my father's. I have invariably succeeded in obtaining union by the first intention of the parts, by the use of sutures. The

laceration commonly extends in a transverse direction, along the border of the lid, from the outer towards the inner angle of the eye.

INJURIES OF THE EYEBALL are comparatively uncommon. Hayseeds, insects, bits of dirt, &c. do now and then fly upon the cornea, and, in the consequent and simultaneous twinkling that takes place, become involved and carried under the upper lid; where (especially if it be pointed) the particle sticks with so much pertinacity, that its extraction turns out, occasionally, a difficult operation. The way to set about this, is to seize fast hold of the upper eyelashes with the right hand, while the left impresses and fixes the lower lid; then, to elevate the former as much as possible, so as to be able to see underneath it. Should this not succeed, we must *evert* the upper lid: an operation not difficult providing the horse be well secured, and the operator be himself expert; and when effected, one that will certainly enable us to discover any foreign body that may be lodged underneath the lid.

CUTS AND CONTUSIONS do, however, occasionally reach the globe of the eye itself. They then cause a great deal of inflammation, and require a correspondent activity of treatment. The most formidable cases of this class are those in which the cornea is penetrated, allowing the aqueous humour to escape, and the iris to protrude through the opening. Violent inflammation supervenes on an accident of this nature; the lids are kept constantly closed; and the animal experiences so much pain and irritation, as to resist to the utmost having them opened. We can do little more in the first instance than bleed copiously; exhibit a strong purge; and use anodyne fomentations to the eye—warm water in which poppy heads have been boiled. As soon as the physic begins to operate, we may probably succeed in separating the lids sufficiently to enable us to examine into the condition of the eyeball. Should we find the iris protruding, it will be proper to touch it with caustic—either with lunar caustic or butter of antimony—with a view of destroying the prolapsed portion, and, at the same time, deadening the high degree of sensibility it has acquired by being squeezed by the

cornea and rubbed by the lids, while in a state of intense inflammation. The caustic must be repeated until the protruded iris is reduced down to a level with the cornea: after that, astringent eye-washes\* may be used to repress the purulent discharge; which, as soon as the violence of the inflammatory action begins to decline, is in these cases generally most abundant†.

### INJURIES OF THE MOUTH, TONGUE, AND JAWS.

These parts, from abuse and mismanagement, now and then become cut, contused, lacerated, or abraded, in a variety of ways. Horses that have suffered injuries of this description, slaver at the mouth, cud their food, or else refuse to eat any but what is of a soft and easily masticated nature. These symptoms lead us to examine into the state of the mouth, where we often find the cause to be tumour, or wound, or ulceration of some part, the effect of injury.

THE TONGUE is sometimes exhibited to us with an incision or rent almost through its substance: at other times the *frænum linguae* is the seat of laceration. This may be produced by violence with a sharp bit. Or it may happen through too forcibly dragging the tongue out of the mouth, and sawing it against the edges of the molar teeth, in the act of administering a ball. Or the tongue may be, I believe, bitten by the animal himself; perhaps during sleep, or in too voraciously feeding: at least, I have had cases said to have occurred during the night, which I could not in any other manner account for. Should the division be in the organ itself, and deep and recent, we may make trial of sutures; though, unless the wound be near the tip, we shall find some difficulty in inserting them. And, after all, we must not expect to accomplish adhesion; for the constant motion the tongue is in, together with the circumstance of the food conti-

\* A solution of alum, gr. x to ʒi; or a solution of white vitriol, gr. v to ʒi. Should there be still inflammatory irritation present, add to either solution twenty drops of laudanum.

† For further information, turn to the account of "Diseases of the Eye."

nually getting into the wound, precludes all hope of that. We may, however, succeed in preventing further laceration and consequent loss of the part below the wound. Though, when there appears no danger (from the depth of the wound) of any such loss, the case will do as well, or even better, without such assistance. We may promote the healing by rubbing the parts occasionally with powdered alum; taking care, prior to dressing, to cleanse the wound thoroughly from all the masticated matter that may have got lodged in it.

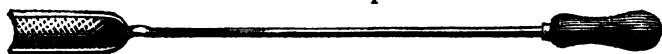
**JAWS.**—The repeated contusions made by the pressure of the port of a sharp curb-bit, will, now and then, be followed by ulceration of the bone, considerable portions of which will come away through the opening; or the injury may go so far as to cause fracture of the jaw. The common situation for this ulcer is in the hollow underneath the tongue; though on occasions the palate is the seat of it. The jaw, however, is subject to another kind of injury, one from violence used with the curb-rein, externally, in the situation in which it is embraced, and squeezed, and bruised, by the curb itself. In a case of this kind, the bone of the jaw becomes tumid and hot, and so tender that the animal will hardly suffer any one to touch it. Abscess forms within the bone; the matter becomes discharged through an opening posteriorly, into which we readily introduce the silver probe for some extent, and feel with it the rugged surfaces of ulcerated bone: or the caries may have become so deep and extensive as to leave a cavity large enough to admit the finger. Now and then we discover a loose broken piece of bone. In most cases there is carious bone to come away; and therefore we must not think of closing too early the external wound. At first, mild and assuasive treatment is best. Fomentation; poultices are good, but troublesome of application: an excellent mode of fomentation is to steam the parts by hanging a hair nose-bag on the head. Give the horse purgative medicine, and keep him on soft meat. If he *must* be used, let him be worked in a snaffle-bit.

The best dressings for these sloughy sores in bones are some of the mineral acids diluted: an excellent one is a mixture of half

a drachm of nitric acid to an ounce of water. Should there appear any disposition in the wound in the soft parts to close over the bone, rub them with lunar caustic, or cover them with the powder of blue vitriol. As soon as the wound begins to granulate from the bottom, tincture of myrrh or benzoin may be used.

THE LIPS AND CHEEKS now and then suffer abrasion or laceration. The corners or angles of the lips are occasionally severely cut by sharp and twisted snaffles. The cheeks may get abraded, and run into a state of ulceration from the outer edges of the grinding teeth becoming sharp and prominent in consequence of irregular or slanting wear. Most extraordinary cases of this kind (at least as far as regards the appearance of the teeth) present themselves; affording us the best proof we can adduce of the continual growth and wear of those bodies. These sores, which are, in general, but superficial, require nothing more after the exciting cause is got rid of, than dressing once or twice a-day by rinsing the mouth out with some astringent gargle. A very good one is made by dissolving an ounce of alum in a quart of water, and adding a drachm of sulphuric acid to the mixture. In cases in which sharp grinders produce the mischief, their edges must be filed off with the

Tooth-rasp.



## FISTULOUS PAROTID DUCT.

I introduce this affection in this place, because there appears every reason to believe that it is much oftener the effect of injury than the result of disease. It is a subject on which, in the year 1828, I gave a paper to the Veterinary Medical Society; and, as I have not had any opportunities since of adding to what I have therein written, I shall on the present occasion take that paper as my guide\*.

By a *fistulous parotid duct* is meant, an unnatural sinuous

\* Those who may feel desirous for more detail than my present limits will permit me to introduce, had better peruse that paper. It is contained in "The Veterinarian" for 1828.

opening communicating with some part or other of the said duct, and through which *saliva* or spittle is discharged. The situation of this aperture, in course, will depend on what part of the duct happens to have received the wound or injury: it may be either the root of the ear, the lower border of the jaw, or the side of the cheek. The issue of saliva at once proclaims the nature of the case, which is further confirmed by the situation of the opening; and frequently, in addition, by the distention of that portion of the duct, between the opening and the parotid gland, in consequence of the accumulation of saliva. The emissions of saliva are most remarkable during mastication; and particularly at the time the animal makes his first morning's meal, or commences feeding after long fasting. In cases of long standing, the duct itself undergoes considerable enlargement; so that instead of being comparable (as it is in its natural condition) to a goose-quill, it becomes voluminous enough to admit one's finger. Indeed, every now and then we meet with a horse having, simply, *enlargement* of the duct. My cousin, Mr. C. Percivall, V. S. Royal Artillery, relates a case in the first vol. of *The Veterinarian*, in which, at one part, it was "as large as a duck's egg;"—"being," as he adds, "where it had been punctured." And this is the probable history of most of such cases. He tried to reduce the dilated duct by repeated blisters; but failed to make any impression on it.

Enlarged Parotid Duct.



THE CAUSES of this fistula are either natural or artificial. Among the chief of the natural may be mentioned, abscess of the parotid gland and strangles. The artificial causes are wounds and injuries of all kinds ; in particular, punctured wounds.

TREATMENT.—Although these cases may appear to a casual or unprofessional observer of trivial import, they commonly turn out to be of an exceedingly troublesome description to the veterinary practitioner. Should the puncture or breach in the duct be recent, we may *try* the effect of plasters, and sutures, and bandages, by way of arresting the issue, and healing it up : but I would rather myself at once have recourse to the hot iron ; for I believe that to be superior to every other remedy ; and the sooner it is applied, the better chance we have of success. A small *budding-iron*—one so reduced at the point that it may enter the fistulous orifice—heated to intense redness, is the proper instrument. The immediate object is to form (by its searing effects) an *eschar* or sort of plug over the opening that will serve as a temporary stoppage to the issue : the ulterior effect of the cauterization being to produce a slough, which, when cast off, leaves a granulating surface to seal up the unnatural aperture.

THE CLOSURE OF THE MOUTH OF THE DUCT (or natural termination of it on the inside of the cheek) in some cases proves a complete bar to the success of any attempt at sealing the fistulous opening. In a case of this description, a *seton* through the cheek is in human surgery recommended. One of an ordinary sort, however, will not answer. The horse will bite off any knot that may come against his grinders with as much ease as one would snip it with scissors. The only method by which I could maintain a seton in the cheek, was by attaching a flat metallic button (with holes through it, but without a shank) to the tape, which being drawn and confined close to the inside of his cheek, prevented him from catching hold of it with his teeth. The object of the seton was to make, in time, a fistulous orifice *internally* ; and then to heal that (by caustic) which was external. Feasible however as this seems, in the case wherein I made the experiment, after every effort I completely failed.



**LAST BUT SURE RESOURCES.**—Should we not succeed by any of the more simple and lenient methods of cure that have been detailed, there is one to which we may resort with tolerable certainty of accomplishing our end, though it is one over which experience has not yet given us the same control as we possess over the others. I was first led to make the experiment from having been foiled in the use of other remedies. I consulted some French accounts—the only ones there are on the subject—and I found that M. Leblanc, a veterinary surgeon, at Paris, had actually extirpated, by incision, the parotid gland, and in this way had got rid of the fistula. The operation appeared to me to be one of the most formidable description: happening, however, to have a condemned subject in my possession at the time, I first performed it on him by way of experiment; and I succeeded even better than I had anticipated. But such was the hemorrhage during the operation, and such the nice dissection and anatomical skill required at every step of the proceeding, in order to avoid wounding or severing one or other of the many large and important bloodvessels and nerves running through or near the gland, that (added to the consideration of the time required—a month at least—for the wound to heal) I must confess I felt little disposed to repeat the experiment on a case I had at that very time in the infirmary, and for the immediate benefit of which I was making such inquiries. Another French writer, Hurtrel d'Arboval, conceived the idea of the possibility of paralysing the gland, of depriving it of vitality, or at least rendering it in this manner incapable of any secretory action. This he proposed to effect by compression, so contrived that the gland might be in a manner isolated; its communication with the surrounding parts being (by means of ifons adjusted so as to press all around it) more or less completely intercepted. The experiment, however, failed; and the cure was at length forced to be effected by actual cauterization and destruction, in that way, of the *entire substance* of the gland.

**THE AUTHOR'S METHOD OF CURE.**—Dissatisfied and displeased with all these three modes of proceeding, it struck me that the same object, viz. the destruction of the gland, might be

effected in a simpler and yet equally efficacious manner. We know, when glands undergo that sort of change in their interior organization which we call induration or *scirrhus*, that they no longer possess the power of secretion ; and I thought, if we could by any means induce such an action within the parotid, that it might answer every purpose of paralysis, or even extirpation. To produce this change—this annihilation of structure—it seemed only requisite to excite, by some artificial means, a certain degree of inflammation : the only difficulty that presented itself was, what that degree ought to be, and in what manner the inflammation thus excited was to be regulated or controlled. A very high degree of inflammatory action would be apt to be followed by sloughing : a very low degree would not accomplish the desired end.

MY FIRST EXPERIMENT was made on a horse in whom fistula of the parotid duct had supervened on the abscess of strangles, the parotid gland itself having been involved in the abscess. Two fistulous openings, both situated upon the gland, remained ; one of which had been closed up by the cautery, while the other had resisted every means of closure that appeared practicable. Into this aperture, which opened just under the root of the ear, I injected with a syringe the following mixture :—

Lunar caustic.....	3ss
Nitric acid .....	3j
Distilled water .....	3j

And at the same time administered six drachms of aloes, internally. Four hours afterwards the gland had become greatly tumefied, and was very tender on pressure. Next day, the swelling had spread a little way down the neck, and the tenderness appeared extreme. No discharge from the opening : purged. Third day, swelling diminished ; discharge of saliva returned. Sixth day, the tumour has been daily diminishing : discharge both purulent and salivary : the same caustic injection repeated. Seventh day, no running from the aperture : tumour reproduced, but not to the same degree as before. Fourteenth day, swelling abating, but very slowly : discharge returned, but much reduced in quantity. Seventeenth day, the gland but little more prominent than natural ; has a firm scirrhus feel, and has lost almost all its acquired sensibility : very little saliva has appeared during the last four-and-twenty hours. Twenty-second day, no discharge : the fistulous orifice closed, and, to all appearances, permanently so. The gland but little more prominent than its fellow of the opposite side ; has a solid, firm, indurated feel ; and pressure is borne upon it with impunity. From this time the horse got rid of his troublesome disorder.

MY SECOND EXPERIMENT was made on a horse whom I purchased with the malady on him. The fistula in him was upon the side of the cheek, directly opposite to the place where the duct terminates internally. In this case I tried *pressure*, first on the duct itself, afterwards on the gland, by means of one of Salmon's patent trusses. That failing, I tied the duct, at the place where it crosses the lower border of the jaw: the only effect of which was to distend the canal, and cause it to give way at the place (at the border of the jaw) where the ligature was applied. I next had recourse to seton, but without any good resulting. As for the *cautery*, and other simple means, all had been repeatedly employed before the horse came into my possession. Professor Coleman saw the animal at this time, and recommended extirpation of the gland. At length I determined to treat this after the same manner as I had done the former case. For this purpose I cast the animal, and then (with a view of rendering my injection the more complete and effectual) cut down on the duct at the root of the ear, and made an opening into it at the part where it emerges from the substance of the gland. This done, I threw in my injection, consisting of the same ingredients I had used before, but of double the quantity. The injection was detained within the gland for the space of a minute, and then suffered to run out; and most of it did return. This was followed (not, as in the other case, simply by moderate tumefaction and consolidation, or obliteration of the glandular structure, but) by extensive swelling and violent inflammation, the consequence of which was, *sloughing*. The whole of the gland, by degrees, sloughed away, leaving a large and deep chasm to be filled up, and healed by granulation: a process that was not completed until the fifty-eighth day from that on which the operation of injection was performed. In course the cure was perfect; no gland whatever remaining. My immediate object, however, viz., the production of scirrhus, had been frustrated; though the cure was of a nature even more complete. The horse continued in my possession two years afterwards; appeared in nowise whatever inconvenienced by the loss; nor would he have led any one to imagine that he had lost one of his parotids, only that the portion of duct remaining between the angle and border of the lower jaw in course always continued enlarged and very prominent to the feel, or even to sight.

Were I to have another case to treat of this description, I would use the same kind of injection, but reduce its strength by at least one half: that is to say, I would mix double the quantity of *water* with the same quantities of the two other ingredients.

#### POLL-EVIL.

In the Farrier's Dictionary we find poll-evil defined to be "a large swelling, inflammation, or imposthume in the horse's poll or nape of the neck, just between the ears towards the mane:"

than which it seems difficult to convey in as few words a clearer notion of the nature and situation of this loathsome and troublesome malady\*. Some years ago, the disease came frequently under our notice : to the credit, however, of horse-proprietors in general, and perhaps in some measure owing to the diffusion of veterinary knowledge, cases of it nowadays are but of comparatively rare occurrence. From the army, and indeed all well conducted horse establishments, it seems banished, never to return. These observations lead us to believe that poll-evil must owe its origin either to neglect or abuse. We shall probably find both concerned.

CAUSES.—Mechanical injury, either in the form of blows, bruises, pressure, friction, &c., is the ordinary exciting cause of this disease. Cart-horses, farmers' horses especially, are the common subjects of it. Their coarse, ill-made, stiff and hard head-collars or bridles, first chafe their polls, and this causes them to be continually rubbing the part. It not infrequently happens that the halter or bridle, from constant friction, begets a sort of mangy affection of the skin, about the nape of the neck, from the itchy annoyance of which the animal endeavouring to relieve himself, by continually rubbing his poll against the manger, occasions that part to inflame and swell, or else become excoriated, and generate among the roots of the hair foul ulcerations ; in either of which ways, poll-evil, in the end, may be produced. Or, it may happen that the roof or beams of the stable, or the threshold of the door, may be so low, that the horses are daily hitting their heads against it. Or the man who drives the team may be one who is fond of exercising the but-end of his cart-whip in preference to the lash. From one or more of these causes, then, or from some other of similar nature, the poll becomes injured—contused, abraded, wounded : the consequence of which is, in one form or other, the disease under consideration.

\* The French call it *mal de taupe*—mole-evil—from the circumstance of the tumour itself being in form like a mole-hill, as well as from that of the sinuses within it being compared to the subterraneous workings of that little animal.

THE NATURE OF POLL-EVIL, therefore, consists in inflammation—in tumour, heat, and tenderness on pressure—either of the part properly called the poll and nape of the neck, or of one side of it; more frequently perhaps the latter than the former. In the more painful and advanced stages of the disease, the peculiar stiff and crouching manner in which the animal carries his head, will at once indicate that he is the subject of it. What symptoms or appearances may be present, will in course depend on the stage and state in which we may happen to meet with the inflammation. It may exist in the simple form of a solid tumour; it may prove a matured abscess; or it may have advanced to the ulcerative stage, and exhibit chasms and sinuses, frightful even to behold. In the case of abscess, the matter may be lodged immediately underneath the skin; or it may have a deep-seated source, and come from underneath the muscles, in contact with the *ligamentum nuchæ*; or even, beneath that, from against the bones themselves. In course, the treatment must vary accordingly: what would be suited to one stage or condition, would not be adapted for another.

THE PECULIARITIES OF POLL-EVIL—what renders it different in its nature from *common* wounds or injuries—arise from the structure and conformation of the parts in which it is seated, and from the continual motion those parts are in. The ligamentous, tendinous, and fleshy connexions uniting the head to the body are mainly concentrated about the poll; at which same place exist those joints through whose mechanism and operation the head receives its various motions\*. When we consider, therefore, the nature and complication of the textures concerned in the inflammation, and the moveable properties of most of them, we shall probably cease to feel surprised that injuries of this kind should so often turn out so tedious and troublesome to heal. In cases in which the matter originates deep-seated—underneath the round or chorded portion of the *li-*

\* For an account of the ligamentous and articular connexions subsisting between these parts, see “Articulations or Joints of the Skeleton.” in my ANATOMY OF THE HORSE.

*gamentum nuchæ*, in the hollow between that and the atlas—it will dissect its way among the cellular connexions of these parts until it arrives at the skin: after that (unless it obtain vent), it will in time occasion ulceration of the ligaments, and tendons, and bones. And the ulcerative process in parts possessing so little comparative organization as these do, is naturally sluggish and tardy. Nor is that of granulation, by which these losses are repaired, a much more active one. These are parts, in fact, slow to destruction, and slow and unkind toward renovation; peculiarities which will serve to account for the wearisome duration and intractableness of such cases, and our consequent apprehension of them in practice. We not only hear, however, of the matter ulcerating its way through the synovial membrane into the joints beneath; but of its penetrating even the sheath of the spinal marrow, and making its way into the cranial cavity, and compressing the brain\*.

**TREATMENT OF THE TUMOUR.**—The treatment must in course be conformable to the state or stage of the case. Though it consist but in tumour or abrasion, the avoidance of any repetition of the cause becomes indispensable. We must then call to our aid those principles on which local inflammation in com-

\* Hurtrel d'Arboval details a case of this kind, the subject of which was a large cart-horse, discharged from the college at Alfort, apparently cured. Some months afterwards, however, he was found to be unsteady on his legs, to stagger so in walking that he could no longer work; and he became so much worse, that he rather dragged his legs after him, than walked upon them, and was in danger of falling at every step. A fistula existed in the nape of his neck at the time; but it was not deep, and was dry and without swelling. On the twelfth day from the attack of staggers, he was unable to rise from his bed; and on the fifteenth was destroyed. An abscess containing sero-purulent fluid was discovered in the hollow between the atlas and occiput, to which there was no external opening; and from which some of the aforesaid fluid had made its way between the posterior bones of the cranium and the dura mater, and had so surrounded the cerebellum, medulla oblongata, and top of the spinal marrow, as in a manner to isolate these parts, at the same time that it compressed them on every side, and squeezed them all up quite into a heap.—*Dictionnaire de Médecine Vétérinaire*.

mon is treated, and we shall at once obtain a clue to what ought to be our general outline of procedure in the case before us. In the case of simple tumour, without any or but very indistinct sense of fluctuation, a brisk dose of purgative medicine, and a blister, will probably tend to its resolution, and so at once accomplish a cure. Unless there existed much heat and tenderness in the swelling, I should, myself, prefer this summary mode of treatment to the application of cooling and discutient lotions; though they, under circumstances of inflammation running too high for blistering, are the remedies we ought in the first instance to employ. In such a case as incipient poll-evil, it becomes a leading object of treatment to prevent, if possible, the formation of abscess and its subsequent eruption; and I know of nothing so likely to effect this, as the application of blisters in combination with general evacuations: we must take care, however, not to push this practice to an imprudent length.

TREATMENT OF THE ABSCESS.—As soon as suppuration becomes established, and fluid sensibly fluctuates under our fingers, we had better at once give it free egress. By suffering it to remain, the pus will burrow among the tendons and ligaments, and surrounding muscles, forming sinuses and caverns which we shall afterwards find it difficult beyond measure to dispose to take on granulative action. Some practitioners would rather postpone the opening of the abscess to the last extremity, in hopes of producing absorption of the deposited matter, and so superseding the necessity of any opening at all. And willingly would I agree with them in opinion, so long as I could entertain any such notion, providing no other harm resulted than in a case of *common* abscess—such as strangles: when, however, I come to think what a world of mischief there may be going on inwardly while I am waiting for the absorption of the pus, which at the best cannot now but be remote and improbable, I cannot hold my hand from giving vent to the collected fluid. It becomes a question, however, and one of some consequence, in what manner and place this is to be effected. The object is, not only to give the matter vent, but to procure

such a subsequent issue for it, that it shall run away as fast as collected. A *dependent* opening would at once prevent any collection or settlement: but that is impracticable. Should the abscess *point* at any one part, I should unhesitatingly say, that that spot should be made the place of puncture; and ought afterwards to be so freely laid open, that we could introduce even our fingers, and examine into the condition of the interior. We may find (and this is the most favourable case) that the matter has simply occupied a single subcutaneous sac or cavity: on the other hand, it may have lodged deep-seated; or there may be more than one abscess, and no communication between them. Should the pus, however, have remained long pent up, the probability is that any original partitions or separations that might have existed, have now given way, and that one cavity includes all: from which, however, pipes, and sinuses, and burrows, most likely run in various directions, bounded by sloughy ligament and tendon, and bottomed by carious bone.

Our next object should be, if possible, to establish counter-openings to the one we have already made; the situation and number of which must in course depend on the depth, direction, and number of the sinuses the abscess may contain. The side of the neck will in general be the situation for any counter-opening that may be required; through which part one may be made by thrusting in either a straight bistoury or a double-edged scalpel or a trocar, in a direct line with the bottom of the abscess: a mode of operation much in vogue at the French veterinary schools; though they *commence* with the lateral opening. This lateral incision should be dilated in a direction backward, if required. Should any carious bone be felt, if possible, it should be removed with a pair of dressing forceps: this done, the incisions had better for the present be crammed full of fine tow; which will soak up the blood and discharges, at the same time that it frustrates all union by adhesion. In fact, either this mode of dressing must, with such view, be kept up; or (which some prefer) setons be passed through the sore—in at one opening and out at another.

THE PRINCIPLE OF CURE in such cases consists in the sup-



pression of all morbid action, and the establishment in its place of healthy or healing operations: objects which, experience teaches us, in cases where sinuses and cavities of much depth or long duration exist, we stand but little chance of accomplishing, unless through the aid of counter-openings in the manner just recommended, or by laying the sinuses open at once by an incision through their parietes; a mode of practice excellent when it can be adopted, but one in poll-evil seldom to be recommended (even if possible), on account of the vast thickness of substance commonly required to be cut through. In laying so much stress upon these operations, it is far from my intention or desire to discard other and simpler means of healing sinuses, such as medicated injections of various kinds, and particularly the employment of *pressure*, from which have resulted in similar cases very beneficial effects\*. My object is to impress on the mind of the young veterinarian, that *operating* on poll-evil early, often proves, in the end, a more speedy and effectual method of cure than what must appear at the outset to him, a so much simpler and safer mode of practice.

THE DRESSINGS that have been recommended and employed for the cure of poll-evil are by far too numerous for me to attempt any account of, even were the majority of them worthy of it, which I believe they are not. A better understanding of the nature and effects of inflammation has led to much improvement in our practice in regard to cases of wounds and sores. We have nearly, I hope quite, done with that "infernal practice" (as Taplin denominates it) of pouring *scalding hot* dressings into the sinuses: a practice certainly not warranted even on the score of comparative efficacy, and highly condemnable on that of humanity, when we come to consider how many milder dressings there are that will answer quite as good an end. Should we be so fortunate as to discover a healthy interior to the abscess—one, though possessing sinuses, yet those not fistulous or callous—the simpler our dressings are, the better. All that such a case will require is to freely dilate the external

\* I shall speak of these under the head of *Fistula of the Withers*.

wound, so as to expose the cavity as much as possible, and to dress it daily with some spirituous tincture\*, or slightly escharotic application†. Such good fortune, however, we can hardly expect: we must look for fistulous sinuses, for sloughy ligamentous surfaces, for carious bone, and even for open joints. When the sore is in a sloughy condition, and sinews or ligaments and bones are already laid bare, caustic dressings of all kinds are to be scrupulously avoided, and such as are of a stimulant and sanative nature used in their stead. Time must be given for the separation of sloughs, for carious bone‡ to become detached and cast off; and not until that process is completed are we to look for any attempt at granulation§. In fact, throughout the treatment of poll-evil (in whatever stage it may be) we must be guided by the principles on which inflammation in general is treated; varying them with the peculiarities and circumstances of the case before us, and ever bearing in mind that our art consists rather in removing impediments or obstructions to healing, than in any power we possess either of generating or promoting that process itself. Poll-evil is one of those diseases on undertaking the treatment of which it behoves us to consider well the nature of the case; and from that to make a sort of calcu-

\* Either with the common or the compound tincture of myrrh; or else with tincture of benzoin. Occasionally, by way of change, spirits of turpentine may be employed. Mr. Simpson has used chloride of lime with success.

† The common escharotic dressings (they are likewise stimulant in their effect) are solutions of blue, white, or green vitriol, in the proportion of a drachm of either of these metallic salts to an ounce of water.

‡ The sloughing process, especially where bone is involved, is often much promoted by the use of the *nitric acid lotion*; for which see page 184.

§ These sloughy sores in general emit quantities of offensive ichorous and purulent matters, which make the animal's poll and neck in a very filthy condition every time he presents himself to be dressed; and render a thorough washing and cleansing indispensable before any fresh dressings can be used. Much of this may be prevented by powdering the surface of the sore (after dressing it) with some absorbent powder—such as charcoal, bark, or bole armenian; and after that, greasing the hair upon which the discharge is likely to fall.

lation in our mind, not only as to the probability or possibility of cure, but also as to the space of time such process of recovery is likely to occupy, in order that we may guard ourselves against incurring censure when we expected to have reaped, and perhaps really deserved, commendation. Cases that have become desperate from their duration, or from mismanagement or neglect, must not be taken in hand at all (if we would respect our reputation), but with an understanding of that nature with the owners of such horses, that would leave us nothing to lose by way of professional character, but all to gain. The uncertainty of cure, together with the time such cure would certainly occupy, supposing it should be accomplished, form considerations which, when set against the value of the animal, in some cases suggest the pistol-shot as the most desirable end our poor patient can be brought to, as well on the score of humanity as on that of pecuniary policy.

The disease on which I am now going to treat is so nearly allied in its nature to poll-evil, that not only will their descriptions serve, reciprocally, to elucidate each other, but much of what is said on one subject will be found equally applicable to the other.

#### FISTULA IN THE WITHERS.

The liability of the part we call the *withers* to injury, either from the pressure, pinching, or rubbing of the saddle or harness-pad or collar, brings it occasionally under our notice as the subject of disease; though much seldomer than used to be the case, owing to the improvements that have taken place in saddlery, as well as to the greater degree of attention paid to such concerns by horse-owners in general. Indeed, a case of fistula in any well-conducted horse establishment would, in these times, be considered discreditable: poll-evil and fistula being both of them diseases resulting from mismanagement, or negligence, or abuse, and not from any natural or unavoidable causes. Not many years ago these noisome maladies made quite dreadful havoc among our farmers' teams, and coach and post horses. I well remember,

too, how many unfortunate baggage-horses and mules we had at one time in the army, in the Peninsula, incapacitated from sore backs and fistulæ, owing to the bad construction and worse fitting of the pack-saddles then in use: indeed, one of the chief considerations with a regiment of cavalry on the march used to be, to prevent the occurrence of these evils; and though, now-a-days, things are much better ordered in this respect than they were formerly, yet it must be borne in mind that these are results that must and will occasionally happen, even under the very best regulations, when horses' backs become subjected, all at once, to so much more frequent and long-continued saddle or harness pressure than they have been previously accustomed to. There is no better prevention than that of gradually inuring these parts to the extent and degree of compression they are required afterwards to endure.

There are certain rules to be attended to in the fitting of saddles which cavalry veterinary surgeons in particular should be acquainted with. The first is, that the saddle should bear upon the back, to the exclusion of the spine and withers; those being parts that will not endure pressure. The second, that the saddle should have everywhere an equal bearing; neither tilting forward too much upon the points, nor backward upon the seat. The third, that when the saddle is on, and the girths fastened, there should remain space sufficient between the withers and the pommel for the introduction of the hand underneath the latter. The fourth, that the points of the tree should clip or embrace the sides without pinching them, or so standing outward that the pressure is all downward and upon one place, instead of being in a direction inward, as well as downward, so as to be distributed uniformly over every part of the point that touches the side. Horses that have low and thick withers are more likely to have them injured than others, in consequence of the continual "riding forward" of the saddle, and its consequent depression upon them. Fleishy, fat shoulders and sides are also very subject to become hurt by the points of the trees either pinching them, from being too narrow in the arch, or from the bearing being downward, directly upon them. I believe also that injury occasionally results from the interruption which a too forward saddle presents to the working or motion of the shoulder, and the consequent friction the soft parts sustain between the shoulder-bone inwardly and the points of the saddle-tree outwardly.

THE NAME of *fistula* is quite as applicable to a poll-evil or any other evil of the same kind, as to the disease we are now

considering; its true meaning being simply a *pipe* or *sinus*: custom, however, has assigned it to disease in the *withers*; and therefore, when we hear talk of “fistula,” we must recollect that such is implied by the term.

IN NATURE, fistula only differs from poll-evil in its cause or origin, and in such peculiarities as it derives from the structure or texture of the parts it affects. It consists in inflammation; according to the laws of which it must be viewed and treated. Although the appellation of *fistula* is, strictly speaking, applicable to but one form of the disease, yet do we find it in practice exhibiting three distinct forms or stages; and, would we understand its nature thoroughly, we must enter into this latter comprehensive view of it.

THE STATE OF TUMOUR is that in which we first meet with the disease. The withers are found tumid, hot, and very tender on pressure. Oftentimes, other reasons are urged for this than the true one; which, on investigation, will commonly prove to be either bearing from the pommel, or pinching from the points of the saddle. The remedy for this is plain and simple. Abstain from a repetition of the cause; or (what amounts to the same thing) have the saddle so altered that it can no longer do mischief. At the same time, cover the inflamed parts with a piece of linen nicely folded and wetted with a cooling or evaporating lotion; and give the horse a dose of purgative medicine. Should any tumour still remain after the subsidence of the inflammation, the evaporating wash may be exchanged for one of a discutient kind. In other cases, however, instead of manifesting heat and tenderness, and other signs of active inflammation, the tumour is of a sub-inflammatory, or chronic, or indolent nature from the beginning. It probably has an *eschar*—a black circular piece of dead skin upon its summit, the result of pressure which the part has borne for some considerable time before it “rose” at all. For this kind of tumour a bran poultice, contained in a linen bag, and confined upon the part by means of a circingle, is the best application. The scab or eschar must slough away before the natural condition of the part can be restored; and this is best promoted by favouring a process of suppuration

underneath it. There is still another way in which fistula may begin; and that is, by a small, circumscribed, pulpy, fluctuating tumour, to which our writers on farriery have given the name of *navel-gall*; though that is more common in the *middle* of the back. Of it I shall speak hereafter.

THE STATE OF SUPPURATION may result either from the tumour assuming that change, or as the sequela of what in the first instance was but a superficial sore; but which, from the constant lodgment of pus upon its surface, and the foul neglected condition it has remained in, has sunk lower and lower, until it has degenerated into a fistula. Even under judicious management, however, an ulcer through the substance of the skin, anywhere upon the spine of the back, bottomed as it is by ligamentous substance, and disturbed at every move the animal makes, is often a troublesome affair, and one that may possibly run into fistula; though, in general, fistula has an inward (not an outward) origin. Matter once generated underneath the fascia and ligamentous substance entering into the composition of the withers, speedily becomes, by the workings backwards and forwards of the shoulder, diffused among the muscles, and cartilages, and bones, burrowing deep between the scapula and the spinous processes, and forming sinuses in different directions, and, in some instances, of such depth that our ordinary probes fail to reach their bottom\*. What renders the case of fistula, then, so formidable to us in practice—so difficult of cure—is the one circumstance of its affecting parts of so many different textures, and such complicated connexion, added to the other of those parts being, most of them, not only such as are continually moving one upon another, but as are more or less influenced by almost every motion of the body in general; so that, by constant friction, fistulæ become callous and leathery, while purulent secretion is kept up from their bottom by the existence there of carious bone, or cartilage, or ligament, the

\* Instances have occurred, Mr. Blaine informs us, “where the matter has penetrated under the blade-bone, and made its way to the *point of the elbow or shoulder*.”

removal of which, together with the suppression or diminution of the friction going on between the sides of the sinuses, constitute two leading objects in the curative measures to be taken.

THE TREATMENT OF THE ABSCESS must be conducted on the same principles as have already been laid down in speaking of poll-evil. As soon as its formation appears fully established, and all hope of resolution seems to have vanished, its evacuation should be determined on. And, generally speaking, that part should be chosen for puncture at which the *pointing* is felt.

THE ABSCESS OPENED, our next duty is to thoroughly probe it, so as to ascertain the state of its interior. We shall probably find sinuses and fistulæ, deep and devious and various in their direction, or else a subcutaneous cavern of some sort in which the matter has been lodged. In either case the question is, what is to be done. At one time of my professional career, I had pretty considerable practice in these cases, and I must acknowledge I found myself a very unsuccessful practitioner, until I took to handle the scalpel freely; after which, I became altogether as fortunate in my results. On numerous occasions did I try injections and dressings of all descriptions, from the simple stimulant to the most active caustic, and even the barbarous scald, without success; though I afterwards effected a complete cure simply by laying open the cavity and leaving it in a state of exposure, without anything further being done than simply dressing the parts every second, third, or fourth day, with some corrective or digestive application. My father was so fully assured of the efficacy of this mode of practice, that he was wont to exclaim, as soon as he had completed the laying open of the sinuses, "Now, the disease is cured\*." Either from the direc-

\* Sinuses may be laid open by incisions either from without or from within. The former are made with a common *scalpel*; the latter, with *bistouries* of different kinds. The sharp-pointed bistoury, with a director, will be found the most useful: though, in other cases, the probe-pointed instrument is most convenient. On some occasions, the *bistouré caché* seems best adapted. All this, however, must be left to the discrimination of the operator.

tion or depth of the sinuses, however, or else from the thickness of substance or nature of the parts to be cut through, it is not always possible or prudent to pursue this line of practice. In such a case as this, we must endeavour to establish a *counter-opening*; i. e. to make (either with a straight sharp-pointed bistoury or a trocar) an aperture through the side of the tumour, in such direction and to such extent as to enter, if possible, the bottom of the sinus; and thus give fresh and more easy vent to the matter collected there. After which, should we be able (by means of a flexible probe or a bougie bent into the required form) to run a seton through the canal, it will not only serve to keep the passage clear and the apertures open, but will, after its removal, be found to have been very serviceable in promoting a healthy granulation in the parts. When the bladebone or its cartilage intervenes, however, this will not be practicable. Any carious bone or cartilage or ligamentous substance there may be to come away, should, to the extent possible, be removed. In fine, the case must in all these respects be treated the same as poll-evil.

**PRESSURE.**—Surgeons are in the habit of treating fistulæ by the application of *pressure*; the object being to keep the sides of the sinus pressed together with a view of adhesion becoming established between them. This is a summary mode of healing, compared with the tedious process of granulation from the bottom of the sinus; and therefore turns out an excellent plan of treatment where it can be practised, and not less so on account of its expeditiousness, than on considerations of humanity: for none of us, I hope and trust, would think of inflicting painful operations either in poll-evil or fistula, where we could gain our ends by so much simpler means. The objection to the plan is, that it is not often (at least, so I believe) we can put it into practice—I mean into *successful* practice. It is the motion of parts in these cases—in particular in fistula—that forms one principal reason for sinuses not healing with the same readiness that they are found to do in other situations; and it is the same motion or friction (combined with the imperfect control we possess over our patient) that constitutes the objection to—or rather that is the reason for—the ill success, in a general way, of



the application of pressure. However, I am happy to have it in my power to announce, that, under judicious management, more may be effected in this way than we appear to be aware of; to which I may add, that we may seemingly take some discredit to ourselves for not having learnt so wholesome a lesson from our sister art long before. Mr. Alex. Gray, V.S., Edinburgh, appears to have done much towards rescuing our reputation in this particular, at the same time that he has considerably enhanced his own, as will be evident on the perusal of two cases he has recently published in the fifth volume of "The Veterinarian," which I shall here take the liberty, for the benefit of science, to transcribe.

"About the year 1816, I was in the habit of attending the stud of the late Earl of Morton. Being at Dalmahoy one day, I met his Lordship's land steward: he asked me to go to the farm, and look at a bay cart-mare, which they had consigned to the kennel. I accordingly went, and saw the said animal, and found the top of her neck much enlarged, accompanied by two deep sinuses, which, upon inquiry, I found to have been running for the last twelve months, nothing having been done, with the exception of cleaning away the matter. I proposed to the steward that she should be sent to my own stable, so that she might be more under my own immediate care; and that I would give her a fair trial, not with the infernal scalding mixture, but upon scientific principles; and I am proud to record, that the result fully answered my most sanguine expectation.

"The mare was sent to me, and I proceeded to examine the extent of the disease. I found two deep sinuses, one on each side of the neck, the bones of which could be distinctly felt with the probe. After cleaning away the matter, I took a scalpel, and laid both orifices open in an oblique direction downwards: then, having fomented the parts with warm water, I dressed the wounds with tincture of myrrh and aloes; and in order to apply *pressure* to the parts (for in this I founded all my hope of success), I had two pieces of wood prepared, about twelve inches long and three broad, thicker in the middle than at the edges, which were rounded off, and also a long flannel bandage four inches broad. I then placed two pledgets of tow next the wounds, putting on the pieces of wood one on each side, and then applied the bandage over all, and as tightly as I could without impeding deglutition. It is necessary, while putting on the bandage, to keep the nose extended, in order to adapt the bandage more perfectly to the part, and apply it more closely. I removed the bandage night and morning, and had the parts well fomented and dressed with the tincture; and in the course of four weeks the mare was well, and returned to her work.

“The second case came under my observation about a year after the foregoing. It was a grey cart-horse, the property of Mr. M’Nab, of Cupar, in Fife. This was also an old and inveterate case, and had been under the treatment of some person in the neighbourhood for a considerable time. I proceeded with this in the same manner as the former case, and left him under the care of a very respectable country practitioner, with proper directions, who, in the course of a very few weeks, sent me the gratifying intelligence of the perfect recovery of my patient.”

**HOPELESS CASES.**—Every now and then, however, it happens (as in the instance of poll-evil), either from neglect, or probably previous maltreatment, the disease has already made such ravages, that the cure is either very dubious, or so remote that the poor animal is not considered worth incurring an expense of keep which is certain, at the hazard of a cure which is probably uncertain; and therefore is doomed, by his owner, to destruction. In these hopeless cases, we find the spinous processes of the vertebræ, the ligamentous substance investing them, the cartilage, and, perhaps, even the bone of the scapula, all in a carious sloughy condition, with a profuse discharge of greenish or brownish purulent matter of the most foetid disgusting character. And such is the established disposition in some of these old sores to continue in the sloughy state, that, do all we may, it seems often quite out of our power to destroy the morbid action, and institute in its place one of health.

#### SADDLE-GALLS, NAVEL-GALLS, WARBLER, SITFASTS.

To a person conversant in the principles and practice of inflammation, common trifling injuries of this description present but little surgical novelty or interest, however annoying they may occasionally prove either to the animal himself, or to his rider. From too partial bearing or pinching of the saddle or harness-pad, or girths or collar, or, in fact, bruise of any kind, the part over-pressed or pinched will “rise;” that is to say, vessels will become ruptured, blood extravasated, and tumour produced; though, where friction is combined, it is more likely to chafe or fret, become excoriated or *galled*. Nothing is more

common with horses whose saddles do not fit, or who have their saddles over-weighted, or upon their backs for an inordinate length of time, than for swellings to rise upon the places that have been most compressed the moment the saddle is removed; at least, providing it be taken off before the back has become perfectly cool: a knowledge of which fact it is that has led to the wholesome practice of keeping the saddle on for some hours even after the return of the horse to the stable. Indeed, some people advise us, supposing the saddle to have been removed, in case the back rises, to put it on again, as the best remedy that can be adopted. Although, however, these swellings are easily got rid of when recent and but occasional, by their frequent relapse inflammation will be excited in the places, and that followed by swellings of another description, such as will not so readily subside on the discontinuance of the cause. Neglect these inflammatory swellings, or still further aggravate the inflammation in them by fresh injury, and they will either augment and run on to abscess, or else subside into tumours of smaller and more circumscribed dimensions, but of a nature indurated, callous, insensible, and indisposed to undergo any change, either for better or worse: for though now and then it happens that a tardy and imperfect suppurative process bursts them and carries them off, it is a very rare thing to find them (even though the cause be discontinued) disappearing by resolution. What confers upon these swellings the specific characters I am assigning to them, is not less the repetition and contused nature of the injury to which they owe their production, than the peculiar conformation of the parts in which they are generated; viz. skin tightly bound down by short and dense cellular tissue to expanded ligamentous textures.

A SADDLE-GALL is "a hurt or fretting of a horse's *back* from the saddle\*." The first step to be taken, in all injuries of this description, is the removal or avoidance of the cause. No man who values his horse would ride a second time upon a saddle that had done such mischief. When recent, these injuries

\* Farrier's Dictionary

(whether they exist in the form of tumour, chafe, fret, or excoriation) require nothing more than being washed clean once a-day, and, while the horse remains in the stable, being kept wet with salt and water ; for which purpose a piece of linen smoothly folded may be confined upon the part. While the cold water subdues inflammation, the salt it contains has a very beneficial effect in diminishing the tenderness of the part, and reducing the tumour.

A NAVEI-GALL “ is a bruise on the back of a horse, opposite to the navel, from which circumstance it has its name\*.” It is met with in different states. The most common is that of a little, soft, puffy tumour upon the ridge of the back. It consists of fluid effused underneath the *aponeurosis* covering the back-bone, which is confined in one place by surrounding adhesions. In this state, a blister will remove it : if one should not quite dispel it, apply a second ; a third will be but seldom required. Now and then, however, these tumours suppurate and discharge a thin dirty-coloured purulent sort of matter. Should the external opening be but small, and the skin under-run, the aperture may be dilated with a bistoury : or, without doing that, pressure by means of a circingle may be applied, so as to heal the sore in the manner recommended by Mr. Gray, for fistula. The most effectual dressings for these sores (which are, in general, of an indolent character) are those that are both escharotic and stimulant. One of the best is red precipitate. A solution of lunar caustic, ʒj to ʒj, will be found useful when the sore is sloughy at bottom. Turpentine dressings may be alternated with spirituous ones as soon as any disposition to healing appears.

WARBLES “ are small hard tumours formed on the saddle-part of a horse’s back†.” When recent, they are easily got rid of by common repellent means‡; though, now and then, they run on to suppuration, and disperse themselves in that way. Too often, however, it happens, either from the continuance of

\* Farrier’s Dictionary.

† Ibid.

‡ See the DISCUTIENT LOTIONS, Treatment of Inflammation, p. 128.

injury, or their being suffered to remain in an inactive condition, they become hard, marbly in feel, and callous in substance—sorts of sitfasts—a state in which it is not easy to determine whether any thing and what ought to be done by way of remedy\*. In general, they are not painful to the animal; and, as it often happens that the saddle is chambered or additionally padded around the places where it bears upon them, they may and do continue for years without getting either better or worse. Under these circumstances, they are often allowed to go unmeddled with: it being with most people an object not to lose their horses' services from a cause appearing to them so trifling; though (as far as the saddle is concerned) that must unavoidably be the case when anything is done by way of cure. Should a remedy be sought, however, repeated blisters may be tried. Mr. Blaine recommends passing setons through them: in my opinion, a commendable practice, providing only you can prevail on the owner of the horse to submit to the time the tardy operation of setons, to prove effectual, demands. To what extent these tumours (like encysted warts) can be dissected out "without removing the integument" (also Mr. Blaine's practice), I am unable to determine: but it strikes me their connexion with the skin must be of too intimate a nature.

**SITFAST**, "a part of a horse's hide turned horny†." The repeated injury any portion of the skin of the saddle-place is liable to receive from the pressure of the saddle from without, and the resistance it meets with from within, either from the back-bone, or from those ribs that are but thinly covered by flesh, causes it to be so pinched and contused, as not only to burst its bloodvessels and occasion extravasation in the first instance, but subsequently to excite and keep up a continual inflammatory action in the part, by which, in the course of time, the cuticle becomes thickened, and leathery, and horny, the same as

\* Mr. Blaine observes, that these swellings may be formed after the maturation of an ulcer, "by repeated friction, delaying the granulating process."

† Farrier's Dictionary.

what happens in corns in our own feet\*. The tumour now becomes callous and hard, and perfectly insensible, acquiring a circumscribed or defined border, as though it had been a part *inlaid*, and did not originally belong to the skin surrounding it. And, in many of these cases, sooner or later, a process commences which seems to verify this supposition. For we find the skin around the sitfast beginning to withdraw from it; and a little purulent matter oozing out from between the two, matting the hair, which, on being parted, exposes a circular chasm of ulceration, more or less deep, indicating that the work of separation has begun—that the sitfast is now being cast off in the form of slough. The sloughing process, however, will prove a tedious one. We must, therefore (should we be anxious for the animal's recovery), do all we can to promote it by fomentations and hot poultices, frequently renewed. The slough being separated, the case becomes one of common ulcer; and must be conducted according to the treatment laid down for ulcerated navel-galls.

## INFLAMED VEIN.

An inflamed jugular vein, the consequence of bleeding, is a case every now and then met with in practice; though it is one of seldomer occurrence than formerly, owing to the more skilful and careful performance of the operation of phlebotomy, as well as to the more prevalent custom of confining the heads of horses for some time afterwards. It is a malady somewhat discreditable to a well-ordered stud, because it is one that may commonly, by proper management, be prevented: to this, however, I feel it my duty to add, that it is an accident that will occasionally ensue even under the most judicious precautionary regulations.

THE NATURAL OR HEALTHY PROCESS by which the parts wounded in letting blood are repaired, may be depicted as follows:—As soon as the aperture in the skin is pinned up, the blood extravasated between it and the opening in the vein, into

\* Here is a veritable pathological resemblance. The disease in a horse's foot, called "corn," is quite another thing in nature.

the cellular tissue, becomes coagulated, by which the latter is so completely plugged that all further escape of blood is effectually prevented. Soon afterwards, the lips of the wound in the vein take on inflammation, and adhesive matter is effused, which so perfectly restores their union, that, in the course of but a few days, it will be found to have assumed the appearance and texture of the parietes of the vein itself. In the interim, the coagulum between the skin and the vein is becoming every day less and less, until, by a process of absorption, it is totally removed. Lastly, the new-formed membrane—that which but lately was adhesive matter—occupying the site of the puncture, in time acquires such perfect identity, as to be with difficulty distinguishable from the coats of the vein themselves\*.

**ORIGIN OF THE DISEASE.**—Should any thing occasion a fresh separation of the lips of the wound, and thereby destroy this natural adhesive process, suppuration will probably ensue—the parts will fester—but the hair will generally become matted over the external orifice, so that, until we come to disturb it, no matter makes its appearance. At the same time the parts become tumid and hot, and tender on pressure: in fine, every thing indicates the approach or rather the presence of internal inflammation.

**THE DISEASE,** then, consists in inflammation, and its seat is the internal or membranous coat of the jugular vein. When we come to loosen and disentangle the matted hair, we shall perceive the lips of the external wound separated, everted, and redder than natural; with a sanious matter, mingled perhaps with blood or pus, or both, issuing from it. The place itself, together with the parts around, are in a state of tumefaction and tension; and the vein, in its course to the head, conveys, from the tumid condition it has assumed, the sensation to the fingers of a hard chord of considerable volume. As the inflammation advances, purulent matter accumulates between the skin and the vein, in the cellular tissue, mingling there with a parcel of

\* For much information on this subject, consult an excellent paper, by Mr. Travers, contained in the First Part of the Surgical Essays, by Messrs. Cooper and Travers.

grumous blood, and, after a time, forming a sort of abscess, which is easily penetrated with the knob of the probe, and, when broken into, discharges bloody purulent matter. All this time mischief is going on in the interior of the vein, the upper or tumid half of whose canal is already plugged by a coagulum of stagnant blood. Inflammation now begins to spread upon its internal coat or lining, and to extend upwards, reaching, in some cases, so high as to involve the same side of the head in the general tumefaction, and even to threaten disturbance of the brain, fever, delirium, and death. This was the case with a horse, the property of an officer of Artillery; in which a dirty or rusty fleam appeared to have been the exciting cause. Unfortunately, no minutes were made of the occurrence; nor was any examination of the parts instituted after death. It is the only instance of fatality that happens to have come to my knowledge.

**TERMINATION.**—The inflammation may terminate (and when sub-acute in its nature, or kept down by timely remedies, is likely to do so) in interstitial effusion: glueing the surrounding tissues together, and obliterating the cavity of the vein; at least, that portion of it which runs to the head. Or it may end in the production of abscess; pus being formed within the cavity of the vein, and ascending for some considerable distance along its canal. These are points on which much light is reflected by the interesting experiments of M. Gendrin.

“If any portion of any artery or vein be included between two ligatures, the intercepted blood first coagulates; a portion of its serum becomes absorbed; a slight degree of inflammation is excited upon the inner membrane; the globules of the coagulum lose their colour; a thin stratum of coagulable lymph is deposited upon the sides of the vessel, forming a medium of adhesion between the clot and internal membrane; and the clot itself becomes gradually organized. There is in this instance adhesive inflammation and organization of the blood without suppuration. But if a stimulating injection be thrown into a portion of a bloodvessel, the circulation having been previously suspended by means of ligatures; and if, after this is withdrawn, blood be again admitted and retained within the vessel, then a more violent degree of inflammation is excited on the internal membrane; and instead of the coagulable lymph and the entire clot becoming organized, they are observed to acquire less consistency: small yellow globules are soon



perceived between their layers, and they gradually undergo a more or less complete conversion into genuine pus."—*Gendrin's Experiments on the Formation of Pus*, contained in the *Histoire Anatomique des Inflammations*, vol. ii, p. 470.

**CAUSES.**—The ordinary cause of inflamed vein is either some mismanagement or injury subsequent to the bleeding; though, in other cases, it arises from the faulty performance of the operation itself. A horse, after being bled, should have his head confined in an elevated position—in other words, should be racked up—for at least one hour: during which state of erection and comparative quietude, the blood extravasated into the intervening cellular tissue has an opportunity of becoming firmly coagulated, while that within the vein is continuing its uninterrupted course to the heart. Where this precaution is not taken, not only is the prone position the head may incline to (should the animal attempt to pick his litter) unfavourable to the return of the blood, but the continual motion of it may disturb the formation of the clot. The principal objection, however, to his head being left loose is, that, should he feel so disposed, he has an opportunity of rubbing his neck against the manger, thereby disarranging the pinning-up, or perhaps displacing the pin altogether, and giving fresh vent to the blood in the vein\*. When a horse is ridden after being bled, the rein of the bridle is very apt to rub against the pin, and in that manner do mischief. Should he be put in harness immediately after the operation, the pressure of the collar, by impeding the circulation, may be followed by ill consequences. It is ever a most reprehensible practice to use blunt, rusty, or dirty fleams or lancets in bleeding: the sort of contused wound they inflict, as well as the rust or dirt they are likely to leave upon its interior surfaces, are causes apt to prevent adhesive union, and dispose the parts to take on unhealthy action. I do not myself conceive that peculiarity of

\* This is an accident that happens every now and then during the night. I have heard of several instances of it. I do not, however, recollect any one that turned out fatal; although, in some of them, the loss of blood proved very considerable.

constitution—*idiosyncrasy*, as it is called—has much to do with this disease in horses ; however much may be ascribable to it in human medicine.

**NO WANT OF ADHESIVE POWER.**—Professor Coleman has given it out as his opinion, that indisposition to union by the first intention in wounds in horses is the most frequent cause of inflamed vein\*. When we come to consider, however, what kind of means we are compelled to employ to close the wound made by bleeding, the too frequent neglect of all subsequent precaution, and to add to these, what sort of a subject we have to deal with, it appears to me we shall find ample causes for its production without ascribing it to one whose existence (to me) is at least doubtful, if not altogether ungrounded. Were the accident referrible to any insusceptibility in the horse's skin to adhesive inflammation, instances of it must happen much oftener than they do ; not only from inattention to the animal after the operation, but even under the most judicious management ; which, by the by, they seldom or never do. Let me ask any surgeon,

\* In the *Essay on the Wounds and Ligatures of Veins*, to which I have already, in a note, made reference, we find, as part of a communication from Mr. Coleman, the following : “ I have no doubt that inflammation of the wound *sometimes* takes place in consequence of the mode used to stop the bleeding ; but I should observe *that the most simple wound through the integuments of horses is scarcely ever healed by the first intention ; and it is this disposition to suppurate and resist adhesive union*, that is probably the most frequent cause of the external wound after bleeding not uniting by the first intention in horses, the same as in the human subject.” That even a clean-cut wound through the skin of the horse, if it be extensive, treated in the ordinary, slovenly, careless manner, seldom heals by the first intention, I admit ; but that the lips of the wound made in bleeding, unless they be afterwards separated by violence, rarely or never fail to adhere, is, to me, undeniable. Nothing is more common, in the present improved state of veterinary surgery, than to close the incisions made in performing *neurotomy* without any suppurative process : and could we preserve the nice adjustment of the divided parts, without the employment of suture, and other irritative means, I am of opinion that adhesion would invariably ensue. These facts, with what I have advanced above, induce me to depart from the opinions contained in this citation : and I feel the more anxious to express myself openly and intelligibly on the subject, inasmuch as I am differing (and with all deference I do so) with Professor Coleman on a point purely practical, and by observation alone to be decided.

what would be the effect of pinning up *arms* as we do the necks of horses?—and, more particularly, if his patient happened to be a maniacal one, by whom his injunctions to keep the arm at rest, and in a certain position, were altogether disregarded? Could we make use of a proper fillet, or of adhesive plaster, and impress on our patient the necessity of keeping his head and neck still, lest he disturb the wound, I will venture to assert, that we should not have to complain of the powers of healing of the skin, nor of those of any other organized part of the animal. Why have we not inflamed veins in the thigh or the arm? If they arise from defective healing powers, these cases ought to be quite as frequent as those of the neck; whereas, they are comparatively rare in practice—to many, unknown: and one reason appears self-evident,—because they are removed out of the way of external injury.

CAUSES OF INFLAMMATION IN THE VEIN.—Concerning the exciting cause of inflammation of the inner tunic of the vein, various opinions have been offered. Obstruction of its canal has been adduced as one: without foundation, however; for ligatures on the veins of horses are not attended with any inconvenience. Exposure of its cavity has been introduced as another: but were this the cause, we should probably have fifty or a hundred cases, where we now have but one. The inflammation in the vein would appear to be an extension, through continuity of substance, from that of the external wound, which always precedes it, I believe, though the latter is not invariably followed by the former: the textures are different, but the same arteries send off vessels to both parts; and though this will not explain *why* inflammation is excited in the vein, it may serve to point out the best means of prevention;—the effectual and speedy closure of the external wound.

AN APPARENT MYSTERY SOLVED.—I shall now make mention of, and endeavour afterwards to account for, a circumstance which, at first view, appears so singular, that it has hitherto, I believe, baffled all attempts to explain it: viz. why inflammation of the jugular vein in the horse should extend itself towards the head—contrary to the course of the circulation; while the same disease in the human arm invades the vein

as it proceeds to the heart—corresponding to the passage of the blood\*. It appears, that although obstruction be not the exciting cause of this disease, it is that which determines its course when produced ; for, I believe, it will invariably be found to proceed in that direction in which the vein is blocked up. Let us see how this will apply to the cases before us, and, first of all, take a view of what happens in the human arm under these circumstances. It is either from the basilic or cephalic vein (two superficial venous trunks at the bend of the elbow) that surgeons draw blood ; which veins freely communicate with others, particularly the deep-seated, just below the part commonly punctured : in the event, therefore, of its canal, near the orifice, becoming obstructed, the vein will not be choked up below, in consequence of the free anastomosis existing between it and the contiguous trunks ; in which the unimpeded circulation will preserve a continual flow of blood up to the obliterated part. But above the orifice no vessels of communication are found, nor can the blood take a retrograde course from the axilla ; consequently there is nothing to prevent that portion of it—that contained in the upper part of the vein—from forming a clot. From the human arm let us advert to the horse's neck. It is from the jugular vein (the internal jugular of the human subject) that we extract blood commonly in the horse ; a vein of large size, and the only one, with the exception of the vertebral, which returns the blood from the head and neck : the horse having no external jugular vein. If, then, this vein be obliterated at the part we bleed, whether is the upper or the lower portion of it more liable to obstruction,—to the retention of a coagulum ? The lower part can have none ; for, having once emptied itself (and this it will do probably even through gravitation), no fresh supply of blood can be sent to it : but the upper, on the contrary, being full, must remain so ; there being no communicating channels by which the blood can be carried off. Here, then, we have an exception to the principle laid down

\* I am not at all prepared to say, why such a difference should exist. I have seen instances in a horse where it (the inflammation) has extended towards the heart ; but, ninety-nine times in a hundred, it will take the opposite course.—*Professor Coleman's Lectures.*

by surgeons, relative to this accident: viz. *that obliteration is always found next to the heart*. Knowing that the same cause, under the same circumstances, will always produce the same effect, I would resolve this apparent anomaly in the laws of the animal economy, by saying, *the same cause is operating under different circumstances*.

Subsequent inquiry and experiment have fully borne me out in this solution of a mystery, apparently the more abstruse the more it was investigated by the laws of pathology; for I am ready to confess, my theory was framed before my hands were occupied in experiment. It naturally suggested itself, that, if this explanation was correct, other veins similar in their distribution and communication to the cephalic or basilic of the human subject, when inflamed, would swell *towards the heart*. Reference to my own cases proved the fact, and subsequent inquiries among some professional friends have corroborated it: both the saphena and plate veins of the horse, when inflamed, I believe, will be found to tumefy upwards; and the reasons are obvious—they need not repetition.

THE TREATMENT to be employed must, in course, vary with the stage and state we find the neck in. Should the place (where the animal has been bled) be swollen and festered, while the pin remains in, the first thing to be done is to withdraw the pin, *carefully*, so as not to disturb the wound. Immediately afterwards commence fomentation, which (to do any good) must be long and steadily persevered in; at the same time administering a strong dose of purgative medicine. In a case so incipient and trifling as this, no dressing to the wound need be employed; on the contrary, the less the parts are disturbed the better. Should the case, however, have proceeded beyond this—should there be a foul bloody open wound, with a discharge sticking about and excoriating the neck, and the vein already chorded up to the head, and exceedingly tender on pressure, commence with fomentation and give strong physic, the same as before; but in this case, as soon as the physic has operated, and we have procured some little subsidence of the swelling, the wound is to be dressed with the following caustic mixture:—

Take about a drachm of blue vitriol in fine powder, and pour upon it sulphuric acid until the mixture becomes of the consistence of thick paste.

Dip a whalebone probe into this, and work it, little by little, thoroughly, into every part of the soft grumous matter filling the wound; allowing it to remain in for some time (during which the horse's head should be kept racked up) before the fomentation be renewed. This will produce a slough of the foul quagmire into which it is introduced, and leave an open healthy suppurating wound, which will commonly require nothing but the occasional application of some milder caustic (black oil, lunar caustic, or blue vitriol powder by itself) to keep it from closing: the continual discharge of matter being of great consequence, so long as any inflammatory swelling is lingering about the neck. In regard to the chorded or tumefied vein, as soon as the slough is completely separated (and any additional tumefaction the caustic may have occasioned has been abated again by fomentation), that is best treated by sweating blisters, whose absorbent effect will be much aided by occasional doses of laxative medicine. In some cases, added to these symptoms, eruptions of blood take place every now and then from the wound, attended with more or less hæmorrhage. This troublesome accident is best counteracted by the actual cautery. A budding iron, sized and shaped to the aperture of the wound, should be introduced at a red heat so as to sear the interior, and should be repeated as often as these eruptions happen: our object being twofold—to seal up the vein, and afterwards slough the wound.

An instructive narrative on this head occurs in "The Veterinarian." "A horse was bled for a sort of cutaneous furor. He was an awkward and resolute beast; but the operation was well performed, and the neck pinned up. Some hours afterwards the attendance of the surgeon was suddenly required, "for the horse was dying." He immediately went, and found the blood spouting from the neck at a terrible rate, and the stable deluged with gore. The horse had rubbed or torn the pin out, and the edges of the wound were so lacerated and ragged, that it was a matter of impossibility, and especially with such a beast, securely to close the wound by another pin, or by common means. The blood continued to flow; danger was pressing, at least the

danger of debility. What was to be done? The surgeon was from home. Ere he could go and return, the mischief would be ended. The only hope was in the cautey; and that immediately applied. He determined to avail himself of the best instrument he could get. He could see no difference between one piece of rounded iron and another. He used the *poker* instead of the *budding iron*, and staunched the blood at once. Every thing went on well. The neck suppurated, healed; when suddenly tetanus appeared, bade defiance to all remedial means, and the horse died." In this case, the locked jaw had no connexion whatever either with the motives or judgment of the practitioner, to whose presence of mind and happiness of thought the owner owed the life of his horse; though that life, in the sequel, fell a sacrifice to an event that might have occurred after injury or operation of almost any kind. The case altogether is an exceedingly interesting one, and well worthy of record.—*Veterinarian*, vol. v, p. 639.

All this time, due attention must be paid to the *position* of the neck, as well as to its *motions*: keeping the head racked up, at all events during the day, will always prove beneficial. Should the sympathetic fever run high, bloodletting is to be practised. And cases occur at times wherein it must be carried to a very great extent: I allude to those in which the local inflammation is intense, and spreads along the canal of the vein, and the consequent tumefaction is so great as to become alarming; at the same time that the accompanying fever is running on to its acmé—delirium and death.

LIGATURE OF THE JUGULAR VEIN.—An interesting case of this description comes to us through the medium of "The Veterinarian," from Mr. Taylor, V.S., Nottingham. The substance of it runs as follows:—

Mr. Taylor was called to a colt that had been bled about fourteen days before, which was followed by thrombus, and that succeeded by considerable hæmorrhage, which was arrested by pinning up; though subsequent eruptions had occurred, and, altogether, much reduced his condition. Mr. T. found, on his first visit, an ulcer leading into the vein, with but little inflammation and chording. He first (with a view of retaining the blood in its proper channel and preserving the vein) had recourse to a very broad strap round the neck, to act as a bandage and confine tow upon the wound. This failed, however, in suppressing the bleeding; and Mr. T. determined on tying the vein, an operation he had performed successfully before. The horse was cast, and an incision made through the skin of the neck four inches long. The jugular vein was isolated from its attachments, and tied.

Three days afterwards there was little or no consequent swelling: healthy suppuration had taken place at the wound, and all was going on well. On the seventh day the wound was granulating, the ligature remaining. On the nineteenth day the wound had nearly healed; but the ligature had not separated. On the twenty-sixth day the ligature separated; and soon afterwards the wound healed up. Three months from this a nice observer could hardly detect any difference in the two sides of the neck.—*Veterinarian*, vol. ii, p. 176.

### BROKEN KNEES.

Among the various causes that might be enumerated for horses falling down and breaking their knees, may be mentioned as the most common, *tenderness before* and other descriptions of *lameness* of the fore limbs; *near* or *tripping action*, *cutting*, *inequality* or *discordance in action* between the fore and hind legs; slippery, or rutty, or rugged roads, loose or rolling stones, pavements, &c. &c. Receiving, as the fore legs do in progression, a very large proportion of the weight of the whole body, nay, at times, the entire of the burthen, surmounted, probably, by the rider, and taking into account the hard and stony surfaces of our roads, it is not surprising that these falls upon the knees should so often be attended with serious consequences. Nor, indeed, will the disrepute in which horses are held who break their knees, and retain the marks thereof, be found so void of reason as it may at first appear, when we consider that lameness and faulty action form two of the leading causes of the accident. The fore legs have but little to do with progression; their principal office is to prop the burthen, step after step, as it is propelled onwards by the hind limbs: so that, should they (one or both), from any cause or accident whatever, miss or shorten or retard their step, so as to fail to be in readiness to catch the weight the moment it is driven forward, the equipoise is lost, and precipitation is the consequence.

**NATURE OF BROKEN KNEES.**—To a medical man there are few more indefinite phrases than that of “broken knee:” to his mind it conveys no precise idea of the *nature* of the accident. Should the injury amount to nothing beyond contusion and consequent swelling, there being no skin cut or divided, I should



imagine it would not constitute a *broken* knee ; although this is but a form of the same injury. A case of this kind would require, by way of treatment, nothing beyond fomentation or evaporating washes, a dose of physic, and a loose box. Should the skin, however, be broken, and thus far the nature of the injury be established, then it becomes a question, and one of great moment, what else is broken or divided. Is it simply the skin ? or is it the sheath of the tendon immediately beneath it ? or is the tendon itself, together with the adherent capsular ligament, ruptured, and the cavity of the knee-joint opened ? It must be obvious that these are considerations of the utmost importance to the medical practitioner, and points that must, more or less satisfactorily, be ascertained before he can pretend to set about the treatment of the case.

**SIMPLE BROKEN KNEE.**—Contusion and more or less laceration of the skin is an accident needing but little medical assistance, although it be one that often turns out a source of much vexation to the owner of the horse, no less on account of the time it requires to get well, than the prospective it affords of leaving behind it a *mark* for life. However, our business in the affair is of a very summary and simple description. In the first place, the wounded parts must be thoroughly cleansed with warm water, and special care taken to eradicate every bit of dirt or grit that may be discoverable. This done, it will become a question how far it is practicable and advisable to draw the divided integument, or any loose flap of skin there may be, together by means of suture. For my own part, for all I mention this, I must say it is a practice I hardly ever resort to: I find, in almost every case, that the wound, after all, must granulate; and so for granulation I generally from the first—prepare it. Any consequent inflammation and swelling that may arise must be met by fomentation, evaporating lotions, and purgative medicine. The horse should be turned into a loose box; and for the first two or three days wear a cradle, to prevent him from gnawing or disturbing the wounds. As for *dressings*, should the wound not kindly *digest* or produce healthy-looking pus, use the *black oil* with a feather once a-day until it does; and then

have recourse to *tincture of benzoin*, or the *compound tincture of myrrh*. Towards the end of the granulating process, slight escharotic dressings may be required, solutions of blue and white vitriol, &c. to repress the granulations, or destroy such as look weakly or unhealthy, and produce a better crop.

CICATRIZATION\*, ever a tedious affair, is rendered yet more so in the case of the knee, in consequence of its being a joint admitting of much motion; one that is used more than any other in the fore limb, and whose motion consists in flexion backward, whereby the skin upon its fore part is stretched (and any wound in it more or less opened) every step the animal takes. There is no avoiding or counteracting this without (in attempts to confine the limb by splints and bandages) doing more harm than good; and therefore it is that a loose box, where a horse moves but seldom, is, under all the circumstances of the case, the best situation for our patient. In respect to any scar, blemish, or

MARK remaining, that must depend on the degree and extent of the injury the true skin (in which the roots or bulbs of the hair are set) has sustained†. Unless the mischief has been very extensive, it commonly happens that the disunited parts of the skin stretch towards each other, and contract fresh union; in which case only a sort of seam is left, which, in time, the hair grows over and conceals‡. Supposing the old skin, however, to be so much bruised that the bulbs of the hair become disorganized, or supposing the vacuity, to be filled up by cicatrization after the granulation of the wound, be so large that new skin

\* Turn to *cicatrization*, under the head of *Terminations of Inflammation*.

† Various nostrums are recommended by farriers and grooms in particular, for “making the hair grow” upon these scars or bare places. For my own part, I regard them as entitled to much the same degree of credit as bears’ grease, or Macassar oil, or any other of those multifarious delusions. I beg to present my readers with one of singular efficacy!

Take of Spermaceti ointment..... 3j

Camphor .... 3ij

Oil of thyme or rue ..... 3j

Mix together for an ointment; which, for a bay horse, is to be coloured with bole Armenian; for a black, with gunpowder or charcoal.

‡ This is the reason why so close and minute an examination is often requisite for the detection of blemish; a research, dealers are often in the habit of rendering still more difficult by blackening the part.

must inevitably be produced, in either of these cases the scar left will be a bare or hairless one; or, in other words, amount to a blemish: a circumstance in horses of much value, oftentimes of the utmost consequence. Grievous as this sequel ever has been considered, however, nothing worthy of notice lay before us in the shape of remedy, until Mr. Cherry, V.S., 2d Life Guards, conceived the possibility of obliterating or eradicating the scar on true and obvious surgical principles. "The numerous cases that occur, induced me," says Mr. Cherry, "some years ago to direct my attention to the devising of some means whereby the appearance of a broken knee might be got rid of, when the injury done amounted to appearance only. Cutting round the edge, and dissecting out the blemished portion of skin, has been tried and has failed, because there would still be a large cicatrix left on the wound filling up; and when the edges of the skin have been brought together by suture, no better success has followed; because the skin *being on the stretch*, the sutures have given way, either from the swelling which always takes place, or from ordinary flexure of the knee in walking, or still more especially in lying down. Indeed, these means have rather increased the evil, than diminished it. It is well known that a long narrow wound cicatrizes much quicker and more completely than a circular; it therefore occurred to me that this kind of wound might be produced by dissecting out a portion of skin that should be included between two curvilinear incisions, both commencing at a point some distance, and extending to a point some distance below it. This would leave a wound in the shape of an elongated ellipsis, the edges of which being brought together, would form nearly a straight line. By making two other incisions, equidistant, one on each side, and corresponding in length with the two first made incisions, the effect of tension of the skin, on the sutures used to bring together the two edges formed in the first instance, would be taken off. I accordingly proceeded to try the experiment, and took from the knee of an ass an elliptical portion of skin, about four inches in length and about one inch in breadth, across the broadest part of it, leaving a gaping wound of corresponding dimensions. Having made the lateral incisions, the edges of the gaping wound were brought to-

gether, and held nearly in contact by sutures. Then there were two wounds to fill up, but each was of only half the extent of the former, and there were four healthy edges from whence granulation could go on instead of two. As to the linear wound in the centre, it might be expected to unite partly by the first intention, which it did, and partly to fill up by granulating. The wounds granulated in the most favourable manner; the sutures were taken out in due time, and very soon the knee had the appearance of three straight lines similar to those produced by the firing-iron. These scars continued gradually to diminish; and in the course of a twelvemonth, when I shewed the subject of experiment to my friends, Mr. Goodwin and Mr. Percivall, we could only discover the lines by separating the hair and seeking for them."—*The Hippiatrist*.

#### OPENED KNEE AND OTHER JOINTS.

A wound penetrating into the cavity of a joint is at all times an affair of serious moment, and becomes eminently so in the case of the knee, an articulation of much complexity of structure, and one whose operations are mainly concerned in the motions of the fore extremity; and yet, unfortunately, it is the joint of all others likely to meet with this accident. Though, for these reasons, the knee demands our especial consideration, yet, almost all that is said in relation to it will equally apply to other joints suffering under similar injury.

CAUSES.—The ordinary cause or forerunner of an open knee-joint is "falling down upon the knees;" an accident that happens at the very time that the skin, and tendon, and capsular ligament in front of the joint, are all put on their extremest stretch, and consequently are so much the more likely to be *broken* or torn asunder. There are other ways, however, in which the joint may be penetrated. It may be pierced by a thorn or stub, as happens at times in hunting; or a nail, or a pitchfork, or any sharp-pointed instrument, may puncture it. When a horse falls, the nature of the wound that may be inflicted in course will very much depend upon the surface the knee strikes against. In some cases it happens that the joint, though not

penetrated in the first instance, becomes opened afterwards, in consequence of the subsequent sloughing of parts from the violent contusion they have suffered.

RECENT APPEARANCES AND EXAMINATION.—When the fall has been recent, and nothing done, the animal comes to us with his knees (one or both) covered with mud or dust, through which is oozing fluid blood, or, at a later period, with which is mingled blood in a dark and clotted condition. The first step to be taken is with warm water and a sponge to cleanse the wounded parts: doing this with a light hand and a prying eye, in order that no risk may be run of adding to the mischief already before us. And while we are performing this preliminary and indispensable duty, is the time for observing and ascertaining the precise nature and extent of the injury. In some cases, “the tale is too soon told:” the bones of the joint lie open to view; or else the issue of *synovia* or joint-oil is such as to leave no doubt in our mind that the joint is penetrated. We must be careful, however, in not too hastily pronouncing that the joint is opened, simply from the appearance of *synovia*: a fluid similar to it (if not of the same nature) is contained within the sheath of the extensor tendon; and the penetration of that alone, without any injury to the joint, will give rise to precisely such a glairy white-of-egg sort of discharge as true joint-oil itself\*. The probe will determine this, and there is no great objection to its use for this purpose, providing it be handled with care and judgment: but there is always a great objection to a meddling prying search, and, where any force is used, the probe will assuredly prove an instrument of fresh mischief.

SYMPTOMS.—The emission of *synovia* is that upon which most reliance must be placed, when any doubt impends; coupled with the result of cautious probe-examination. The poor animal halts with the wounded limb; though not near so much recently after the accident as on the accession of inflammation. He stands with it semi-flexed, resting it upon the toe, and taking special care to impose no weight upon it. From the moment

\* We are more likely to mistake this kind of accident for open joint in the case of the shoulder than any other articulation; though, after swelling is come on, we may do so in many cases.

the accident has taken place we must be prepared for the consequences,—the supervention of inflammation, violent according to the extent of the local mischief, as well as, in some measure, in ratio with the constitutional irritability of our patient. Above all to be apprehended, is inflammation of the *synovial membrane*, the lining of the joint. The day after the accident, the parts in the more immediate vicinity of the wound evince some unusual heat, fulness, and tenderness, and the inflammation from day to day augments and spreads, until the entire limb more or less participates in it. About this time also the constitution sympathizes—*sympathetic fever* comes on. The pulse rises; the animal loses his spirits and appetite; his mouth becomes dry; his eyes injected; and his skin and extremities feel warm. With the increase of pain, the pulse rises higher and higher; the breathing becomes disturbed; the animal relapses from his dull mood into one of watching and irritability: in short, from this period, the fever from pain and irritation, unless some check be given to it, is likely to run to such a height as to exhaust the vital energies of our poor sufferer even before time has been given for the local inflammation to have taken any turn towards restoration of the wounded parts.

LOCKED JAW has been known to follow an opened joint: the circumstance has never happened in my own practice; but cases of it are on record\*.

ANCHYLOSIS or *stiff joint* is what however is to be most dreaded, it being the more common sequel of this accident. The synovial membrane, from exposure and the irritation consequent on the escape of its sheathing and protecting secretion, is, in some part, seized with inflammation, which rapidly spreads over the entire capsule of the joint, involving both it and the ligaments around in one mass of disease. My own pathological observations here tally with those presented to us in Mr. Brodie's admirable work on the subject†, viz. 1st, a preternatural secretion of synovia; 2dly, an effusion of adhesive matter into the

\* For further particulars, and how to prevent this, see *Locked Jaw*.

† Pathological Observations on Diseases of the Joints, by B. C. Brodie, F.R.S.

cavity of the joint; 3dly, a thickening of the synovial membrane, and subsequent conversion of it into a substance resembling gristle; accompanied by interstitial effusion into the cellular textures around the joint, cementing them together in one general mass: 4thly, suppuration of the cavity of the joint, and abscess in case it should be closed, which will distend and burst the capsule again, and, perhaps, in a fresh place: 5thly, ulceration of the synovial membrane, and consequent caries or erosion of the articular cartilaginous ends of the bones: 6thly, *anchylosis*, which is not only a consequence of the foregoing changes, but a result ever to be apprehended from a long motionless condition of a joint. The capsule and other external ligaments become converted into a spongy osseous mass; and, after a time, even the heads of the bones themselves, possessing no motion within their osseous case, contract bony adhesion: so that, in the end, the anchylosis becomes most complete and totally irremediable.

Anchylosis may be said to constitute one of Nature's modes of cure, since the disease in the joint will be found to terminate when it occurs; thereby at once removing every apprehension we may retain for the animal's life. Unfortunately, both for our patient and ourselves, however, life may as well be lost as any important joint be rendered motionless. Though a man with a stiff leg or arm may still continue a useful member of society, no one would accept of the services of a horse with a stiff leg.

**TREATMENT.**—That excellent surgeon, the late Mr. Hey, of Leeds, always laid great stress on the practical importance of *preventing* inflammation in the joint. His words are—"Upon this circumstance chiefly depends a successful termination\*." Now, the way to accomplish this, is with the utmost expedition to remove the cause from which the inflammation takes its rise. This we believe to be, exposure of the cavity of the joint: it therefore becomes our earliest and most anxious duty to close this cavity. How is this to be effected? The surgeon's practice is to produce union by the first intention by adhesive plaster and bandages, or else by suture; and at the commencement of my professional career, in cases of punctured wounds, I pursued this plan myself, and not without success: I soon, however, discovered its general inaptitude for veterinary purposes; and found

\* Hey's Practical Observations on Surgery.

myself compelled to resort, in most cases, to more efficient though much more formidable measures. The actual cautery is, I believe, now, by a sort of general consent amongst veterinarians, admitted to be the most ready and efficient agent we possess for the closure of a wounded joint; and to it we had better at once have recourse than dally with the case, and run farther risk of inflammation being set up in the interior. A budding-iron, fitted in size to the aperture to be cauterized, is to be applied at a dull red heat, and with it the sides of the opening, as far inwards as the capsule of the joint, are to be thoroughly seared, so that a kind of coagulation of the juices—the *secretions* of the parts—may be produced, and thus a temporary sort of plug formed which will serve to seal the cavity, while the inflammation consequent on the burning is preparing by adhesive effusion a permanent one. After the application of the cautery, the wound may be sprinkled over with some absorbent powder—common flour, or charcoal, or bole. The continual extension and quietude of the limb are doubtlessly both very desirable objects; but when they cannot be accomplished but at the hazard of constant annoyance to the animal, probably they had better be dispensed with. I have found splints and bandages, on this account, often productive of more harm than good; and unless our conveniences and apparatus be of the best description, and our subject be a tolerably peaceable one, even slinging (at least in cases where the opening into the joint is not of formidable dimensions) is not, on the same account, to be recommended. Such cases will, generally, do very well confined in a box, where the animal cannot move about a great deal, even if he felt any disposition, which, under such circumstances, he seldom, I may say hardly ever, does. He should be turned loose, and wear a cradle. A case of recent occurrence will require no other local treatment than this; though one in which inflammation has become established may, from frequent eruptions, become very difficult to manage in so simple a manner. In this latter case I have repeatedly witnessed the best effects from a blister applied all round the joint, immediately after the introduction of the cautery. To poultices and fomentations I am decidedly hostile: they rather tend to promote



the *suppurative* process, while it is the *adhesive* for which we are so desirous. The astringent powder forms the best covering for the sore. The cautery must be repeated after every fresh eruption of synovia; but I would not delay the blister beyond the second application: indeed, when the wound is at all formidable, I should apply it on the first. Independently of its medical operation, a blister, by the stiffness and soreness it creates in the skin, totally indisposes the animal to flex the joint.

**SUSPENSION.**—In cases in which the wound into the joint is extensive, and the injury altogether such as is likely to be followed by much local inflammation and sympathetic irritation and fever, it becomes advisable from the first to place the animal in *slings*—by which we mean a state of suspension, wherein the weight of his body, instead of being borne by his three sound limbs, is supported by artificial means. The simplest mode of slinging a horse, and that which annoys him the least, at the same time that it affords him every opportunity of reposing himself that such a situation can, is to suspend him from a cross beam by means of ropes and pulleys, connected with a very broad piece of sailcloth spread underneath the animal's belly; which should be furnished with two breechings and two breast-girths (all broad and padded) in order to keep him from slipping out, either backwards or forwards. The ropes and pulleys (being a similar sort of apparatus to what sailors use for raising weights on board of ship) enable us to elevate or lower the animal at pleasure. In general, it is not advisable to lift him quite off the ground: I have usually found my patient quietest and most at his ease when his feet have been suffered to touch the surface. At the same time, his head should be confined with two collar-reins or ropes of considerable strength, and the headstall itself should be well padded. Though horses in such strange situations may kick and plunge about a good deal at first, in general they are not long in becoming resigned to their trammels, and then turn altogether as quiet.

The Frontispiece will serve to convey sufficient notion of what this slinging or suspensory apparatus should consist as well as of its mode of application, to enable any person to fit up tackle of the kind. The addi-

tional breeching and breast-girth attached to the rings upon the sides of the belly-cloth, will be found to contribute much to the comfort as well as security of the animal. The padded strap or web, carried over the hind part of the neck, will prove serviceable in preventing the breast-girths from slipping down.

**CONSTITUTIONAL TREATMENT.**—That must be regulated by the degree of fever present or likely to supervene, and the age, strength, and condition of our patient. We should lose no time in administering purgative medicine; because, under circumstances of rest, it will take probably thirty hours before it come into operation. And as for bleeding and other constitutional remedies, they must be conducted according to the necessities of the case, on the principles already laid down for the treatment of sympathetic fever.

**A NEW MODE OF TREATMENT.**—Mr. Thos. Turner, V.S., Croydon, has put us in possession of a plan for treating the more formidable cases of open joint, and in particular the knee, which I myself have put to the test, and can confidently recommend to the notice of my readers, as a means of saving many a valuable life that would otherwise probably be inevitably lost to us; for it is a plan that may be put in practice, with even a good prospect of success, in cases which, but for it, would be consigned to a pistol-shot.

To shew the improvement that has been made even in this department of our art, we have only to quote a passage out of James Clark, Farrier to His Majesty for Scotland, in 1782; the acknowledged best practical writer of his day:—"When the capsular ligament of any joint is perforated or cut through, there is but little chance of a complete cure being effected, so as the horse may be useful for the saddle or carriage."—*Clark's Observations on Shoeing.*

The particulars of Mr. Turner's method of procedure are contained in a paper read to the Veterinary Society, in 1829, and since published in the second volume of "The Veterinarian," from which I shall here take the liberty to extract them.

In cases of puncture, and wounds of similar description, into the joint, Mr. Turner is satisfied with the efficacy of the actual cautery; but in cases in which there is an opening into the joint of large dimensions, and, at the same time, a large external wound, he abandons the cautery for his own mode

of treatment: He rests his prospects of success on being called "within a reasonable time after the accident, and before injections of any kind have been forced into the joint."—"Having washed the external wound of the knee with a sponge and luke-warm water, a silver probe may be gently introduced for the purpose of removing any particles of dirt or gravel within the wound. A paste is then to be prepared, composed of wheaten flour and table-beer only, which are to be well stirred together cold, and afterwards boiled for about five minutes, until the paste becomes of the consistence commonly used by paper-hangers. It may be then coloured by a small quantity of bole armenian, and applied moderately warm to the knee; being spread with a spatula as thick as it will lie, not only on the wound, but all round the joint, and for some space up the arm, as well as about four inches below the knee on the cannon. A very thin light pledget of tow, sufficiently extended to encompass the knee, is to be applied, in front of the joint, upon the paste; then nearly half a sheet of stout brown paper in a similar manner, and a large cotton stocking, with the foot off, drawn well up over the whole. On the outside of the stocking another thin layer of the paste is to be applied, and a calico bandage, six yards in length and from four to five inches wide, is to be rolled round the part with very moderate but regular pressure; another six-yard roller, of the same description, is then to be applied, but with a less degree of pressure.

"A moderate quantity of blood should be drawn from the neck, according to the age and condition of the patient, and a small dose of aloes should be administered, as much as would be expected to render the *feces* pultaceous, but without purgation." The horse should be slung in the manner I have recommended. A cart-horse breeching, with any other suitable tackle that may be found on the spot, will, by management and ingenuity, generally prove very serviceable in effecting this. The part of the treatment on which Mr. Turner chiefly relies for accomplishing his end, is, "*Never to remove the dressing just described until the joint has closed, and the synovia ceased to flow.*"—"By the second or third day the bandage becomes hard, dry, and as harsh as a board, owing to the heat of the inflamed limb having completely dried the paste. There is then usually a considerable tumefaction both above and below the bandage. The animal evinces much pain; his respiration is hurried, his pulse quick, and, perhaps, the appetite impaired. But the time is now arrived at which ease may be afforded the patient, without in the least obstructing the process of cure. This resource consists in making four longitudinal incisions through every layer of the bandage, a notch above and below on each side, and leaving the bandage entire both before and behind. The relaxation from pressure, by the length of these notches or incisions, must be as limited as the urgency of the symptoms will allow; but in every case I make it a rule to afford this relief in some degree. From this period the constitutional disturbance comparatively ceases, the appetite returns, and respiration is tranquilized, although

the pulse may remain quick. But now we are possessed of a substitute for the injured capsular ligament,—a compress, closely adhering and encompassing the joint, of the exact shape of the joint, which never varies its position, is as hard as a tanned hide, and yet flexible.

“ If by the sixth or seventh day, owing to the large size of the aperture in the capsule, the compression has not had the effect of closing the joint, and there should be found a considerable lodgement of fluid (a mixture of pus and synovia) in a depending part of the compress, another incision must be made in the compress to give exit to this fluid, beginning in the front at the inferior part, and continuing it upwards, but no higher than necessary.

“ It is in this stage of a bad case that great nicety of treatment is required, and we are not to be at all disheartened if the joint be not closed; for there will be found a coagulum filling up the mouth of the wound, and extending to the orifice of the capsular ligament, though scarcely sufficient to close it. The nicety I allude to consists in taking care not to remove or disturb this clot or plug; for it is this coagulum, when sufficiently organized, that becomes as it were the cork to the bottle. This is the material point on which the success of the case depends, and which differs from the ordinary mode of treatment, it being customary to remove the bandage every day, or every second day, in order to give the inflamed parts the benefit of warm fomentations, and cleansing the wound, as it is called, which, in reality, is the greatest act of violence that an opened joint can receive in the shape of curative treatment; and just as often as it is repeated, are the efforts of nature opposed by the removal of this jelly-like substance.

“ The next thing to be done is to spread another dressing of the adhesive paste over the outside of the compress, and to apply another six-yard calico roller with gentle pressure upon it. In this stage of the case, regular pressure will be found rather to diminish than increase irritation, but there is some skill required even in the simple act of applying a roller to an inflamed part. This last bandage should remain undisturbed as long as possible, with the expectation that, by the next time the fluid is evacuated from the compress, the capsular ligament may be found closed, and the discharge of synovia ceased; but whether so or not, the same treatment should be continued.

“ There is one curious circumstance that not unfrequently attends the process of cure by this treatment, and which I hail as a good omen, but which many writers have remarked upon as indicative of the total destruction of the joint. I allude to an eruption and discharge from another part of the joint, perhaps the back of the knee, and which they describe as the bursting of an abscess within the joint. I merely mention this fact to shew that these eruptions do not always communicate with the joint, and that I do not make a practice of indulging my curiosity by introducing a probe to ascertain that point, although a fluid may be escaping looking more like synovia than pus.

"The treatment here recommended is strictly mechanical, as far as relates to closing the joint: it consists in a surgical operation, conducted on the same principle as the setting of a fractured bone; and I have but little recourse to medicine, from a firm conviction that Nature's restorative powers are fully adequate to the task.

"The swollen parts above and below the bandage may be rubbed two or three times a-day with some discutient evaporating lotion, taking especial care that the part above the compress may not be left so wet as for the lotion to descend and trickle under the bandage.

"However well the case may go on, I usually confine the horse to the sling until I am satisfied that the joint has remained closed about a week. He may then be turned loose in a box for a few hours every day, but must return to his sling at night, until the joint appears to have regained sufficient strength. The original compress may now be cut off; and the limb should be lathered with warm bran water, soap, and flannel, every day, from elbow to hoof. The wound dressed with a plaster of digestive or mild tincture, and a single six-yard calico roller continued with only comfortable pressure.

"The granulations which may rise above the level of the skin will, of course, require to be subdued by the usual means; and when the wound has completely healed, the knee may or may not require a common blister.

"I deem it requisite to observe, that some cases of opened knee-joints are so appalling, not only from the magnitude of the external wound, but likewise from the aperture in the capsular ligament being equally extensive, that if I were called in, even at the moment of the accident, I might despair of success by this or any other mode of treatment. But the case in which I least hesitate to condemn the unfortunate subject, is the opened joint, accompanied with a complete division of both the extensor tendons, the animal being thereby deprived of the power of extending his foot; and such a complicated case is not an uncommon occurrence."

**ANOTHER NOVELTY IN THE TREATMENT.**—Mr. Dawson, V.S., London, has offered to our notice and trial a dressing for opened joints, which, he informs us, he has used with such success as to make him "sanguine of effecting a cure in cases in which, before, he considered a cure almost impossible." I have used it in two cases of *punctured* joints, and both recovered: for which cases I should apprehend it is better adapted than for such as would call for the more elaborate but truly admirable plan of Mr. Thomas Turner's.

Mr. Dawson's mode of procedure is as follows:—after observing that the grand object of cure consists in closing the joint, and remarking that the

means ordinarily employed for this purpose are "those that promote and keep up inflammation," Mr. Dawson says, "it is my uniform practice to remove by scalpel every part, whether sinew, ligament, skin, or what not, that Nature herself would remove by the sloughing process. I then foment, say for half an hour, for the purpose of cleansing the wound, as well as encouraging the discharge of as much blood as can be by that means obtained; after this I dress simply, and bind the joint by a flannel bandage of some yards in length. This dressing I repeat daily, till synovia appears, when I discontinue fomentations, and use a saturated solution of corrosive sublimate in spirits of wine; or a lotion made by first dissolving the salt in muriatic acid, in the proportion of two drachms of the former to four drachms of the latter, and one pound of water. This dressing may be used twice a day, until synovia has ceased flowing; after which the wound may be treated in the ordinary way. In a few instances, the foregoing liquids will not be sufficiently strong of the corrosive sublimate to coagulate the synovia as it issues from the joint; you may then use the sublimate in the form of a fine powder, either mixed with some description of farina, or even alone, taking care that it does not find its way into the joint, and as much as possible applying it only to soft parts, and in a manner avoiding every thing but the coagulated synovia which will be found about the opening through which the liquid flows. In punctured wounds of joints, the introduction of the powdered sublimate a little way into the opening is the best way of applying it. As a matter of course, I bleed and give physic," &c.—*Veterinarian*, vol. iii, pp. 497, 498.

OTHER OPENED JOINTS need not occasion us any difficulty or embarrassment, after having entered so fully into the case of broken knee. It is but seldom that cases of this kind occur, and when they do they commonly consist in punctures from thorns or stubs, stabs from pitchforks, scissars, knives, &c.; circumstances that render them, generally speaking, of a much more manageable nature than contused and lacerated knee-joints. The hock, the fetlock, the shoulder, the stifle, come occasionally under our notice: but their cases present nothing but what any veterinarian acquainted with the principles on which opened joints, generally, should be treated, cannot fail, after a little practice, to apply with equal judgment and discrimination.

## WOUNDED TENDONS.

Every now and then it happens, from thorns, stubs, flints, kicks or treads from other horses, and other accidents, that the flexor or extensor tendons of the legs become punctured, lacerated, or divided : cases, though of formidable and painful characters, that will, when taken in time and judiciously managed, most commonly in the end do well.

A PUNCTURED TENDON, or tendinous theca, when a bursa or sheath is penetrated, will require to be treated after the same manner as a punctured joint. The cavity opened is a synovial one, and must consequently be sealed up with all possible despatch ; and nothing will prove so effectual for the fulfilment of this object as the application of the red-hot budding-iron, renewing it as often as any fresh eruption takes place. At the same time, inflammation must be kept down both by local and constitutional means. Apply a linen bandage around the leg, wet with some cooling lotion. Give the animal purgative medicine. And should it be a flexor tendon that is pierced, put on a high-heeled shoe ; on the other hand, should it prove the extensor, lower the heel as much as possible : this is a part of the treatment in general too much neglected. Should any fever arise, let blood be abstracted from the system.

CAUSE UNREMOVED. — In cases in which the thorn or stub\*, or flint, or whatever it may be that has wounded the tendon, still remains in the part, instead of pursuing such treatment as above, we must foment and poultice, and use every warrantable means to extract the foreign body. Should the forceps prove unavailing for this purpose, and the case come to us in so recent a form that no action has yet commenced towards inflammation, we shall be justified in making an incision through the skin, in order that our research may extend deeper ; but I would by no means cut the tendon itself. After inflammation is once begun, however, we are not warranted in making any cut or

\* “ More hunters are ruined by stubs or splinters of wood running into their legs and feet than by thorns.” — *Nimrod's Letters*.

fresh wound : we must content ourselves with fomenting and poulticing, in the hopes of the foreign body being, in time, ejected by the process of suppuration. Should this plan not succeed after a reasonably patient trial, and the inflammation appears subsiding, apply a blister. We must, however, not forget, in our anxiety to eradicate the cause of mischief, that many instances have occurred of extraneous bodies (thorns, nails, musket balls, &c.) becoming what is called *encysted*—that is, *cased in*—and thus continuing for years, or even, I believe, for life, without causing any lameness or apparent inconvenience.

On this point Nimrod informs us, “ There are few cases of mechanical injury to which hunters are more liable than thorns in their legs, or stubs in their legs and fetlocks. In two instances it has happened to me, that four or five gatherings of pus have been collected and discharged before the thorn would make its appearance, it having been, of course, deeply seated. I have the point of a blackthorn, three-quarters of an inch long, now in my possession, that a hunter of mine carried nearly a whole season in his fetlock-joint, causing suppuration after every day’s work.”

“ Some years since I sold a mare to an intimate friend for a good round sum. The second season he lamed her ; and after having been severely fired by the late Mr. Walton, V.S., of Shiffnall, she was turned out for the summer. When she came into work again the following autumn, a large blackthorn issued from between hair and hoof ! She was then sound.”

EVEN A DIVIDED TENDON need not occasion despair, or (as has too frequently happened) cause the horse to be shot, as incurable. There is a case in which not only the thecal synovial cavity is broadly opened and exposed, but the tendon is severed : a complication of injury that would, in a man, be very likely to cause a locked jaw ; and, indeed, such results are on record in veterinary practice ; though the horse’s restorative powers are such as to buoy us with the hope not only of recovery, but even of return to soundness ; and this it is that urges us to save the poor animal from destruction, and exert ourselves towards his cure. The external wound is commonly of such a nature as to render any sutures inadvisable. The most important steps we can take are, 1st, approximation—*apposition*, if possible—of the severed ends of the tendon ; and, 2dly, the resistance of all motion in the limb, or at least of such as may tend to disturb the pro-



cess of union. The raising or depressing of the heel (by alterations of the shoe) will be the chief agent in the former object, and a bandage will do much towards the latter. We must be prepared for sloughing of the ends and exposed parts of the tendon (indeed, should there be any loose or ragged parts, it will expedite the process to take them off at once with the knife); and we must treat the case accordingly—with linseed meal, or barm, or carrot, or turnip poultices; and with dressings of nitric acid lotion (3j to ℥j), turpentine, spirituous tinctures, &c. We are to look forward to the sloughing being succeeded by granulation, and hail that appearance as the incipient step towards the union of the severed tendon and the closure of the wound, with which alone will cease the issue of synovia.

What common-place detail in treatment I may have in this (or, indeed, in any other cases) omitted to mention, the reader's knowledge of inflammation in general, and his own good sense, will enable him to supply.

#### PRICKED OR WOUNDED FOOT.

There are two ways in which the foot may be "pricked:" either through misdirection of the nail in shoeing; or through the animal treading upon or picking up a nail or other penetrative body, such as flint, glass, &c. The parts especially subjected to this injury are those that compose the bottom or ground-surface of the foot;—the sole and the frog. The injury itself, in course, will vary with the cause, the part pricked or punctured, and the depth and direction of the puncture.

PRICK IN SHOEING.—To those who are acquainted with the conformation of the foot, and the intimate connexion subsisting between its different parts, it is matter of some surprise and admiration to behold the farrier's art so perfect, that accidents of this nature do not happen oftener than they do: the luckless wight of a smith frequently incurs the maledictions of his employer for pricking his horse, when, but for the unsteadiness of the animal while shoeing, or some difficulties presented by the foot, no such error probably would have been committed. The

injury may be the effect of direct puncture of the sensitive parts from the nail being driven into the foot, either in consequence of its being *pitched* with too much inclination inward, or from its point splitting, and that giving it a contrary direction to that which the smith designed it to take: or it may be the effect of the nails being driven too near the quick—"taking too much hold"—in which latter case the lameness will not become manifest, probably for three or four days.

"Punctures or pricks from nails in shoeing are commonly said to proceed from ignorance or blundering. This may sometimes be the case; but, at the same time, it is an accident that may, and indeed does, happen to the most expert artists; and it is surprising, considering the narrow space there is in some hoofs for driving nails, that it does not happen more frequently."—*Clark's Observations on Shoeing.*

PICKING UP A NAIL (as the phrase goes) or a piece of glass or flint, or any other sharp-edged substance, is an event of much more frequent occurrence than any one, unacquainted with horses, would imagine: indeed, it is truly surprising how a long "tenpenny" nail can be "picked up" and forced into the foot with the same directness and effect as though it had been driven in by a hammer; and yet this is a case familiar to every veterinarian. Though no part of the bottom of the foot can be said to be exempt from injuries of this description, the most common place for the nail to enter is the *commissures*—the hollow places between the bars and the frog; and, next to them, the frog itself, on account of its being so soft and penetrative a body. It rarely happens that a nail runs into the sole unless it be in the case of the horse casting his shoe and treading upon the wrenched-out stubs, while some nail yet maintains its hold: flint and glass, however, often cut through it.

At the time of the riots in London, triangular sorts of crosses of iron, called *crows' feet*, used to be thrown about the streets for the purpose of stabbing the horses' feet of the cavalry, and so crippling them. It became necessary, at last, to defend the feet from these passive but dangerous weapons, by an iron sole or plate, rivetted to the shoe.

NATURE OF THE DISEASE.—The *horny case* in which the

sensitive foot is enveloped, renders these injuries distinct in their pathology and treatment from such as we have hitherto been considering. Though horn, so long as it is connected with living parts, has properties it retains no longer after being once pared off or detached, yet in itself it possesses no organization or vitality—can neither experience inflammation nor suffer pain. Notwithstanding, suppuration, therefore, may take place, and pus become collected within the hoof, no absorption of the horn can follow, as in the case of abscess in other parts: the matter must consequently remain pent up; and, worse than that, from not being able to get vent, commence and continue spreading, until it has under-run and diffused itself between the adherent surfaces of the sensitive foot and the hoof. This is the mischief of which we are at all times so suspicious and apprehensive in injuries of the foot, and whose prevention or early detection becomes the chief duty of the veterinarian; while the free liberation of the pus, when once it is deposited, constitutes the grand secret of cure.

TREATMENT.—A recent case of prick or wound in the foot—one in which the period for an attack of inflammation has not yet arrived—will require but little of us, but much of the smith. Let the shoe be removed; the pricking or wounding substance, whatever it be, instantly extracted; and let the farrier with his drawing-knife pare out the injured parts of the horn, so that any dirt or grit may be removed; and at the same time let him thin the contiguous parts of the sole (for of the sole in particular I am now speaking) so that no hurtful pressure may be kept up upon the wounded quick, which we are to regard as the destined seat of an approaching inflammation. We are, in short, so to pare the foot as to give the injured parts room and liberty to swell; and at the same time take care so to expose them, that, in case any matter should form, it do not remain and burrow. Should it be a recent prick from shoeing, all that needs be done is to follow the nail-hole up for a little way with the *searcher*\*, so as to enlarge its canal, and leave it with a free opening below;

\* A very small description of drawing-knife, made expressly for such purposes.

and afterwards immerse the foot in warm water for one or two hours, and then bind it up in an ample bran poultice. In fact, our treatment in these cases consists rather in (what the French call) *la médecine expectante*, than in any positive benefit we can confer. Dressings of all kinds are to be avoided: where there is no disease, they can do no good; but their presence may and probably will do harm.

To shew the mischief farriers have been known to do in such cases, I quote the following from James Clark:—"A fine young chaise horse, on a journey, was pricked with a nail in shoeing, which being immediately observed, the farrier poured into the wound *oil of vitriol*! The animal, from so simple an accident, treated in so barbarously ignorant a manner, was, after much disease and pain and suffering, in the end rendered useless."—Mr. Shipp, V. S. late 23d Dragoons, relates a case in which the wound in the foot "was filled up with turpentine and tar, and that *set on fire in the hole*!"

INFLAMMATION APPEARS. — The case is now altogether altered. We must bethink ourselves of our remedies for local inflammation; bearing in mind all the while we are proceeding with them, that, as it is the foot *within the hoof* we have to treat, we shall from time to time require, in addition, the aid of the drawing-knife. We must be sure to examine the wounded place thoroughly, in order to ascertain whether there be any pent-up matter: should the horse *walk* lame, and the parts themselves evince much tenderness on pressure with the pincers, we may feel certain that such is the case. When the sole is under-run, it will spring more than usual—feel hollow under the pincers, and even, when made thin, under the impression of the thumb: in which case, when we come to open the wound afresh, the matter (become ash-coloured or black, probably, from confinement) will spirt out with a jet, or else, perhaps, will be found deeply buried in the wound after a search such as no one but an experienced smith or professional man would think of making. In the case of a prick from shoeing, when of any duration, we must with persevering search follow up the nail-hole: in one of a puncture through the commissure, it occasionally becomes necessary to remove the bar or side of the frog, to get at the bottom of the wound; for, wherever we

have reason to be suspicious of the presence of matter, *to the bottom* of its recesses we must, if possible, extend our operations. Exit must be given to the matter *below*, with the drawing-knife; since it cannot make vent for itself, unless by mounting upwards beneath the horny wall and producing an eruption at the coronet, between hair and hoof; and such, unless we discharge it, will never fail, in accordance with the laws of the animal economy, to be the termination of the case; constituting then the disease we call *quittor*. The matter being discharged, and the place of its concealment freely opened and exposed, the diseased surface will, whenever the matter is discoloured, and the case is one of any duration, require a caustic dressing:—a solution of lunar caustic, ʒj to ʒj; a solution of corrosive sublimate, ʒj to ʒj of spirits of wine—equal parts of muriate of antimony and water—a strong nitric acid lotion—any of these, increased or diminished in strength according as appearances may seem to demand, will commonly answer the purpose: at the same time it must be borne in mind, that many cases occur of comparatively recent date, in which no other dressing is required than a simple spirituous tincture, or a common blue or white vitriol solution. The condition of the diseased parts, which will be indicated by the kind of matter discharged, will in course determine the nature of the dressing to be applied. After dressing, envelop the whole foot in an ample bran or linseed meal poultice. At the same time give the animal some purgative medicine: it will serve, as he must probably remain at rest for some days, to keep his legs from filling. A second caustic dressing will not, in general, be required; not unless it turn out on examination, the next day, that fresh matter appears in the wound, and is coming from parts which have escaped our exploration. Indeed, provided the first paring and dressing be well executed, it does not often happen that the case needs any thing afterwards, save some simple slightly escharotic or stimulant application, and the renewal every twelve hours of the poultice. As soon as the inflammation begins to subside, and the parts are assuming a healthy aspect, relinquish the poultice, and cover the foot simply with a coarse cloth or leathern boot, which will answer the double purpose of

keeping the dressing in, and the dirt and wet out; the two latter being the greatest enemies a veterinarian has in all foot sores. Use blue vitriol or alum lotion to strengthen the new granulations, and make as much *pressure* as possible upon them with dossils of tow in binding up the foot; which will not only harden the exposed sensitive parts, but will tend more than any thing to the production of a sound and substantial fresh horny covering.

**EXTREME CASES.**—Every now and then our attention is called to cases in which the local injury done is of such dangerous and appalling nature that the poor animal, in the heart-rending pain he suffers, is either threatened with delirium and death from excess of nervous irritation, or else, perhaps, becomes afflicted with a locked jaw. The nail may have run into the *flexor pedis* tendon; or even through that tendon into the navicular joint: a case that will not only require much modification of treatment as far as the foot is concerned, but will demand copious abstractions of blood (which it will be advisable to make rather from the plate vein than the jugular), ample doses of purgative, and, perhaps, sedative or narcotic medicine, according to whatever may happen to be the particular concomitant circumstances. It sometimes happens that the whole limb becomes involved in the inflammation raging in the foot\*, so that it is not safe to risk any fresh wound in it; in which case we must bleed from the neck. In regard to the local inflammation, our remedies ought to be of the most soothing description—frequent fomentation, succeeded by large poultices. Unless the joint be opened; and then the actual cautery may be required. Should there be

\* Mr. Shipp presents us with an interesting case of this description. The horse picked up a carpenter's nail, which pierced the sole, near the point of the frog, and ran up by the side of the flexor tendon, for "more than two inches," "and was extracted with great difficulty and pain to the animal." "The thigh, and even to the middle of the belly, was violently inflamed and swelled, together with the perineum, and *part of the other thigh*, and his scrotum was at least five times its original size."—"Symptoms approaching locked-jaw appeared:" which seemed to have been quelled by a drench containing two ounces of ammonia, and two drachms of opium. The case ultimately did well.—*Shipp's Cases in Farriery*.

any appearances manifesting a tendency to locked jaw, give large doses of opium, one and two drachms at a time. This outline of treatment I must leave my reader to fill up with what has been laid down before, under the heads of "inflammation," "fever," and "opened joint."

### TREADS AND OVER-REACHES.

These are two names for injuries differing in no essential respects in their nature, their seat, or the causes in which they originate. Both are contused wounds; both are inflicted on the coronet, between hair and hoof; and both are occasioned by blows from the shoes of the other feet. They owe their peculiarity and importance chiefly to the structure of the part receiving the injury—a glandular part—a part where the skin and hair terminate, and the hoof begins: and this it is that renders such wounds so tedious and troublesome to heal, and makes persons, especially those who hunt, so apprehensive of incurring them.

A *TREAD* is a contused wound of the inside of the coronet of either hind foot occasioned by a blow (or *tread*) from the calkin of the shoe of the other hind foot. The blow is received upon the *coronary substance*\*; a part which, although vascular in the highest degree upon its surface, is in its interior composition cartilaginous and resisting; so that (what with this and the shoe) the vascular covering becomes literally *bruised*, and the consequence is, not only destruction of parts, but hæmorrhage: hence the bloody, jelly-like, black condition in which we commonly find the wound.

AN *OVER-REACH* is neither more nor less than a *tread* upon the heel of the coronet of the *fore* foot, occasioned by a blow (or *over-tread*) from the shoe of the correspondent *hind* foot.

*What part of the hind shoe is it that inflicts the blow?* Formerly, people used to think it was the *toe*†; now-a-days, how-

\* For a description of this part, see my "Anatomy of the Horse," p. 437.

† James Clark (who is good authority in matters of this kind) says, "it is occasioned by the *toe* of the hind shoe." And adds, "Some horses are

ever, it is believed to be the *inside edge* or *rim* of the shoe, directly opposite the toe\*. It is not so easy a matter to determine as any one might imagine: indeed, had it been a point easily cleared up, there would not be so much difference of opinion as still seems to exist. It appears to me that the accident may occur in either way.

**NATURE.**—In these injuries, then, the terminating border of the skin and the incipient, soft, tender one of the hoof, are contused and separated; the vascular expansion underneath is not only ruptured, but severed; and the cartilaginous substance underneath that again is bruised, and, perhaps, broken down: no wonder, therefore, that a wound (though so simple in appearance) of such a complicated nature, should require the time and care that this does to heal up and recover. In the first place, it has to cast off a slough, consisting of the bruised, separated, and deadened parts; secondly, the chasm thereby exposed has to granulate; and thirdly, the sore has to cicatrize and form new horn.

**THE TREATMENT** consists in aiding or promoting these processes of Nature. In the first place, with a pair of sharp scissors, cut off any separated portion of horn or bruised skin that may be protruding, and at the same time clip off the surrounding hair. Then immerse the foot in a tub of warm water. And, lastly, dress it with nitric acid lotion, and envelop it in a hot poultice.

much addicted to this, owing to the manner of going, viz. the hind foot moving in the same line of direction with the fore foot, in riding fast, the fore foot not giving place in time to the hind foot, strikes against the fore heel: hence some horses in trotting make a clattering noise with the hind shoes striking against the *heel* of the fore ones; hence, likewise, many horses are thrown down by the same cause.”—“Trot or walk horses upon soft ground, or sand, and it will be found that those who are addicted to over-reach, place the hind foot either a *little before*, or in the *same print* or tread which the fore foot occupied; others place the hind foot *on the outside* of the print.”—*James Clark's Observations on Shoeing*.

\* “Ten years ago (from 1823) a good judge of these matters informed me that over-reaching was not done by the toe, but by the *inner edge of the inside of the shoe*. I have since had the inside edge of the hind shoes *bevelled* or rounded off, and have never had an over-reach. Hunters are more particularly subject to over-reach in countries where there is much brook-jumping.”—*Nimrod's Letters*.



As soon as any slough has come away, and the surface looks clean, apply turpentine or spirituous or slightly escharotic dressings, to stimulate the sluggish powers of the cartilage. When the heat of the inflammation is passed over, and the parts have commenced healing, leave off the fomentation and poultices, and openly expose the wound: be sure, however, to keep it clean and free from any over-hanging hair or horn that may annoy it, and dress it every day.

### QUITTOR.

A quittor may be defined to be, a sore on the coronet connected with a sinus in the foot. Professor Coleman's definition of it is, "a formation of pus between the sensible and insensible laminæ." The usual seat of the disease is the inner side of the coronet of the hind foot. It comes in the form of a hard conical tumour, hot and tender on pressure: indeed sometimes so painful as to occasion considerable lameness. Its maturation is commonly tardy; and, after all, but imperfect. At first the tumour is so enveloped in long hair as to be with difficulty discoverable: but as soon as it begins to grow ripe, the hair falls off, leaving the place nearly or quite bare; an effect seemingly owing to an acrid sort of exudation which the swelling at this period emits from its surface.

CAUSE.—The several facts connected with the *seat* of quittor—the *coronet*, the *inner* side, the *hind* leg; together with the additional one of *cart-horses* being the common subjects of it, not only tend to elucidate its nature, but put us at once in possession of the ordinary ways in which it is occasioned. Everybody knows what awkward ugly contrivances the *cramps* or *calkins* of those great horses' hind-shoes are, and therefore it need not excite surprise that they should so often prove the occasion of injury to their wearers: eternally inflicting cuts and treads upon the opposite legs—the *coronets* in particular; those being the parts which, from their situation and prominence, are almost certain to receive the injury. Mischief may be done by these ugly weapons, even in the stable. Cart-horses after work, from heat or fret, or sore already existing, acquire a habit of rub-

bing or scratching one hind foot with the calkin of the other, in which harsh friction the coronet never fails to suffer the most; and this may and often does prove the forerunner of a quittor. In fine, any sore or wound of the coronet may, from neglect or mismanagement, degenerate into a quittor. But quittor may have an *internal* origin. It may arise from abscess in the foot. In speaking of *pricked foot*, I observed that matter collected in the foot could not possibly get spontaneous issue through the hoof, and consequently mounted to the coronet, that being the nearest point where it could discharge itself. One of the most frequent causes of quittor, after this manner, is a corn that has run on to suppuration: which again accounts for the disease being commonly on the *inner* side. It may and will, however, occur on the outer, whenever the injury or internal disease happens to be on that side.

NATURE.—A due consideration of the causes will throw some light on the *nature* of quittor: although this is a part of our subject involved in more intricacy than a superficial view of the disease might lead us to imagine. The French veterinarians, who are on all occasions so fond of “splitting hairs” (though now and then they do so to some purpose) have described no less than *four* kinds of quittor. The first or *simple* kind being that in which the disease is so superficial as to be confined to the skin and subjacent cellular tissue; the second or *tendinous* quittor, that wherein the sinus or fistula is contiguous to the sheath of the flexor tendon; the third, or *horny* quittor, that in which the hoof forms a part of or boundary to the fistula; and the *cartilaginous quittor*, that in which there exists ulceration or caries of the cartilage of the foot. Although these distinctions are not in strict accordance with what happens in practice, it usually occurring that two of these forms are present at one and the same time, yet are they not altogether without their use; since they serve, taken collectively, to point out the parts that are or may be affected by the disease.

THE SIMPLE FORM of the French school is, in truth, but a *spurious* one. Some portion of the skin of the coronet receives a bruise from the opposite foot, the cellular tissue underneath it

becomes clogged with extravasated blood, and loses its vitality; and the consequence is, that both it and the injured portion of skin slough away, leaving a deep circular chasm to be filled up by granulation. Although, however, this does not of itself constitute what veterinarians in this country are in the habit of regarding as quittor; it may, for want of cleanliness and medical attention (the matter being allowed to lie in it and burrow), degenerate into one, and no doubt often does.

TRUE OR GENUINE QUITTOR essentially consists in *sinus* or *fistula* running into the foot. Its course is longitudinal, between the quarter (or side of the wall) of the hoof and the lateral cartilage; and its seat is the pencillated connexion existing between the sensitive and insensitive laminae. Under circumstances of confinement, or such as are unfavourable to its escape, the pus contained in this fistula will burrow and spread, and wherever it goes produce a separation between the horny and sensitive parts. In addition to this, however, when once diseased action has become established within the foot, one part after another, by contiguity, will take it on, until even the cartilage and bone participate: first, the sensitive laminae will inflame and ulcerate; next the elastic structure connecting them to the outside of the cartilage will run into ulceration; finally, the cartilage itself will take on inflammation and become carious: thus will that which in the first instance was readily curable, be rendered tedious, difficult, and even doubtful of cure. So weak are the living powers of cartilage, that when once inflammation has seized it, the diseased portion runs into a state of ulceration—becomes what is called *carious*; which process of self-consumption it is that is apt to be so tardy and lingering, and often untoward, and which keeps up such continual irritation in the foot, and occasions those fœtid, loathsome, dingy, green\*, discharges that in most cases issue in such abundance. These ravages have been known to proceed to such a length as to make holes through, or even totally destroy, the substance of the cartilage, and afterwards continue their

\* The *green* complexion of the wound is, in particular, an indication of carious cartilage.

progress into the pastern or coffin joint: a lamentable event that would be made known to us by the sudden augmentation of pain and irritation, and the admixture of synovia with the other discharges; and one that would call for the prompt attendance of the knacker—that he might take a life which had now become beyond our art to render worth keeping.

THE CONSEQUENCES more immediately connected with these advanced and painful stages of the disease, are *lameness*, *tumefaction of the leg*, and *sympathetic fever*. They, in course, will vary with the degree of inflammation present, and the particular parts it happens to be invading: they will likewise be much influenced by the quantity of discharge emitted by the diseased textures.

OUR PROGNOSIS must be regulated by the length of time the disease has continued, and by the extent of its ravages. Should the case be recent, or even the cartilage yet be sound, there is every prospect of a speedy and effectual cure. When, however, time has established a habit of diseased action in the foot, and especially under the circumstances of a carious cartilage, a cure is not to be expected under two or three months; and it may require a much longer period. The most mortifying circumstance of all, however, is to find that after a cure (so far as the healing of the wound goes) is effected, the horse still continues lame; and with his foot in that state in which he is likely ever to remain so, owing to the *changes of structure* that have taken place in it. The conversion of the cartilage into bone, perhaps of its elastic covering and laminæ also, and the consequent deformity that takes place in the hoof, called *false quarter*.

THE TREATMENT of quittor is either an affair of ordinary practice, or one that costs us much time and trouble, and occasionally vexatious disappointment, depending on its origin and duration, and on what progress the disease has made among the structures of the foot. Should it have originated in abscess of the sole, all that will be required is, to make a free opening into that part with the drawing-knife, through which the collected matter may escape, and any that may form afterwards drain out as fast as produced: which being done, the case is to be

treated precisely in the same manner as abscess from pricked foot, in which it is not improbable it may have arisen.

On the other hand, when the quittor (as it commonly does) originates *above*, instead of below, it will call for other modes of treatment. In the first place, it will be requisite to ascertain the length of time it has existed, in order that we may have that information to aid us in forming our opinion of the present state and stage of the case before us: points we now have to ascertain from the consideration of four leading symptoms:—1st, the appearance of the wound; 2dly, the kind of discharge issuing from it; 3dly, the result of a careful and thorough examination of its interior with a probe; 4thly, the degree of lameness existing.

THE ORDINARY MODE OF CURE consists in the introduction of *caustic* into the sinus; and so long as the cartilage preserves its integrity—by which I mean, is free from caries—this is, perhaps, the most prompt and effectual mode of proceeding. The common farrier's practice is to mix about half a drachm of corrosive sublimate\* in powder, with twice or thrice the quantity of flour, and make them afterwards into a paste with water: this he takes up by little at a time with the point of his probe, and works it about in the sinus, until the paste appears rising to the orifice above. After this is done, he commonly has the horse walked about for an hour or two—or even sent to slow work again—which produces a still more effectual solution of the caustic, at the same time that it tends greatly to its uniform and thorough diffusion into every recess and winding of the sinus. The consequence of this sharp caustic dressing is, a general slough from the sinus: every part of its interior surface is destroyed, and the dead particles become agglutinated and cast off along with the discharges in the form of a dark firm curdled mass, which the farrier calls the *core*; and knows well to be the necessary prelude to the cure. And so it commonly proves; for granulations follow close behind it, and fill up the sinus. This, I repeat, is to be our practice, providing the disease has not yet

\* Some use *arsenic*: being a stronger caustic, however, it requires additional flour;—others use *verdigris*, without any addition;—others, again, *blue vitriol*.

invaded the substance of the cartilage: at least, I can recommend the trial of only one other mode of treatment; and to that, on account of its comparative mild and painless operation, I feel inclined, myself, in the generality of cases, to give the precedence. I am alluding to

**MR. NEWPORT'S METHOD OF CURE\*.**—"After the shoe has been removed, thin the sole until it will yield to the pressure of the thumb; then cut the under parts of the wall in an oblique direction from the heel to the anterior part, immediately under the seat of complaint, and only as far as it extends, and rasp the side of the wall thin enough to give way to the pressure of the over-distended parts; and put on a bar-shoe, rather elevated from the frog. Ascertain with a probe the direction of the sinuses, and introduce into them a *saturated solution of sulphate of zinc*, with a small syringe. Place over this dressing the common cataplasm, or the turpentine ointment, and renew the application every twenty-four hours. I have frequently found three or four such applications complete a cure. I should recommend that when the probe is introduced to ascertain the progress of cure, it be gently and carefully used; otherwise it may break down the new-formed lymph. I have found the solution very valuable where the synovial fluid has escaped; but not to be used if the inflammation of the parts be great."—For this piece of valuable practical information veterinarians may, and I believe all do, consider themselves under great obligations to Mr. Newport: it is evidently the result of practice, and comes to us in too straightforward and respectable a form to be either doubted or disputed. Those that feel inclined to do either, may soon satisfy themselves of its efficacy by trial.

**OTHER MODES OF CURE** are to be resorted to when these fail; and cases now and then (though comparatively rarely) do present themselves, in which we are compelled to adopt measures of that harsh and cruel nature that nothing short of absolute necessity would warrant the execution of. When once the substance of the cartilage has fallen into established caries, very questionable is the power we possess over the disease through medicinal interference. Though in some instances caustics are followed by sloughing and healing in the usual way, yet it often happens that fresh eruptions take place, and that these succeed one another until we become, in the end, forced to admit the unwelcome truth, that the case is not to be cured by any injection or dressing we can employ; or, indeed, by any other apparent means but an operation.

**CAUTERIZATION** was formerly much practised for the cure of quittor of

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\* Published in "The Veterinarian," vol. i, from which I have extracted it.

all kinds. It has, however, in this country pretty generally given place to the potential cautery; while the latter has, in a measure, in its turn, given way to yet milder remedial agents. Even for such cases however as we are now considering, the actual cautery seems by no means so well adapted as an operation of which I am about to speak. For, unless we could cauterize every part and portion of the carious cartilage, we should fail to eradicate the disease; and even supposing we could, it does not appear so certain that every part of the cartilage of the foot (for it has been proved to differ in its nature and organization, in its anterior and posterior portions\*) possesses the power of *exfoliation*—of throwing off that which is dead, and retaining what is alive; indeed, there are some intelligent French veterinarians who assert that caries once engendered in the cartilage, must pervade its entire substance, from want of power within itself to resist the destructive action, or counteract it by a healthy one†.

THE OPERATION FOR THE CURE OF QUITTOR consists in the partial or total removal of the *quarter* of the hoof, with a view to the exposure of the lateral cartilage, and the ultimate excision of it, either in toto or in such portions as may be deemed, on examination, unfit to remain. The operation originated with Lafosse, sen., and has since his time been very generally practised throughout France: though of late years it has experienced considerable diminution of its popularity in consequence of the strong recommendations of Professor Girard in favour of *corrosive sublimate*. Still, however, the Professor admits the necessity of the operation in certain cases‡. There are different ways of performing this operation: our selec-

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\* Towards its base it is similar in its texture to cartilage, properly so called; as we approach its borders and posterior part, it discovers a fibrous or filamentous texture. Still more posteriorly the fibro-cartilaginous organization is more manifest, and here seem to exist isolated cartilaginous knots, surrounded by substance entirely fibrous. Lastly, the extreme posterior end is fibro-adipose, and is confounded with the fatty frog. Hence it is that while the anterior part is incapable of regeneration, being wholly cartilaginous; the posterior parts possess the power of throwing up granulations from the cellular tissue in their composition.—*Reflexions on Quittor*, by M. Reinault.

† “L’experience a demontré que ce corps n’est pas susceptible d’exfoliation partielle, et que, quand on se contente d’enlever la portion malade, le reste ne tarde pas à s’alterer, à donner lieu à la renaissance du mal, et à rendre une nouvelle operation semblable à la première bientôt indispensable.”—*Dict. de Méd. Vet.*

‡ Cases in which the quarters and heels are in a state of suppuration, the sole under-run, or the *base* of the cartilage and the coffin-bone carious.

tion must depend on the part of the cartilage that harbours the disease. Lafosse confined himself to the section of a portion of the quarter, about an inch in breadth, but yet extending from the coronet to the bottom. This has been found insufficient, and so the entire quarter has been removed. An improvement on this practice, however, is suggested by Hurtrel D'Arboval\*: he recommends that we commence our incision (as usual) opposite to the anterior extremity of the cartilage, below the coronary prominence, and carry it (instead of directly downward, in the course of the fibres of the hoof) *diagonally* across the wall in a direction towards the heel; so that when the isolated posterior part of the quarter is removed, there still will remain all the lower border, which will serve us for some time to nail a shoe to—or at all events, will prove a serviceable support to the animal, even without a shoe†. Having made this diagonal groove down to the quick, and likewise detached the quarter at the coronet, the part thus isolated is to be rasped as thin as possible, preparatory to its elevation by a broad pritchel, with which its edge is to be raised sufficiently to enable an assistant to lay firm hold of it with the pincers, and with them carefully, though forcibly, rend it from its connexions: a part of the operation that may often be much facilitated by dividing the connecting fibres, to the extent that we can, with a common scalpel. After this, so much of the coronary substance and skin as clothe the lateral cartilage are to be dissected off it, but *not detached*—only made a flap of, which flap must be carefully laid and bound down again in its place after the operation. So much effected, the state of the parts will determine what our next step is to be; or whether we have already, as far as respects operation, accomplished all we wish. Should the laminae be found the seat of disease, the cartilage appearing not yet affected, the nitric acid lotion may, now that the diseased parts are exposed, answer every end of restoring them to healthy action: an end, I would add, in all foot-cases, that is materially furthered by voluminous dossils of tow, and tight and compact bandaging. But what we have to look for and expect is, carious cartilage, and perhaps coffin-bone as well; and, in this case, we are recommended not to be content with removing the diseased portions of the lateral cartilage, but *the whole* of that body‡: otherwise, what is left of it will fall into the same course of disease, and we shall be, after all our trouble, foiled in our purpose. For the more convenient and complete excision of the cartilage, the French use a curved sort of scalpel, which, from its form, they call

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\* In his "Dictionnaire de Médecine Vétérinaire."

† At this period of the operation, the animal must be cast and properly secured. Also, before we proceed further it is advisable to put a ligature of tape around the pastern, sufficiently tight to suppress hemorrhage.

‡ See note (in French) p. 250, extracted from the *Dict. de Méd. Vét.*



a sage-leaf knife (*feuille de sauge simple*): I have seen the instrument in this country; but, nowadays, one seems to hear little or nothing about it—a circumstance probably rather owing to the rarity of the cases requiring its aid than to any mean opinion we entertain of its utility.

THE CHIEF PRECAUTIONS IN OPERATING required of us, are that we do not, in detaching the cartilage from its internal connexions, wound either the plantar bloodvessels or nerve, cut through the capsule of the pastern-joint, or divide the long lateral ligaments of the pastern; the two former of which accidents would be attended with temporarily serious consequences, though not such as are necessarily irremediable or fatal; while the latter would probably prove a source of permanent lameness. A tantalizing occurrence is the co-existence of ossification of the cartilage with caries of it. Girard takes notice of this vexatious complication; and tells us that we are still to proceed with the operation; removing the entire cartilage, though wholly converted into bone, should it be found necessary; or, should the transformation be but partial or in places, only such portions as still retain any of their cartilage. The old English farriers, who derived their knowledge of this operation from France, were in the habit of sadly misapplying it, and on quite needless occasions removing the quarter of the hoof to get at this ossified cartilage; which they called the *quittor-bone*, and regarded, sound or unsound, as the producer of all the mischief.

THE DRESSINGS commonly recommended after the completion of the operation, are those of a stimulant or spirituous nature; such as alcohol or brandy and water, the warm tinctures, &c. After the skin and coronary substance have been laid down in their places, and the border of the wall next to the wound has been made so thin and weak that it cannot anywise injuriously press upon the sensitive parts, the bare surface is to be dressed with fine or soft tow (or lint) dipped in the spirituous mixture; over which dossils of coarse tow should be smoothly and compactly piled, and the whole afterwards bound on with broad coarse tape, in such manner that firm and uniform pressure may be exerted upon parts that have now lost the support and compression of the hoof. Lastly, the whole may be confined by a piece of sacking or coarse cloth, or else encased in a leathern boot. The first dressing should not be removed before the fifth or sixth day; or at least, not before suppuration is established. The after-treatment of the case must be conducted on the principles laid down for the general management of such wounds.

### FALSE QUARTER

More commonly results from quittor than any other cause: though it may be occasioned by injury or disease of any kind destroying the organization of the *coronary substance*: on which

the production of the wall depends. In the same manner as any partial separation or destruction of the glandular substance at the root of one of our nails occasions a sort of cleft or division in it; so will injury of any part of the coronary substance cause a defalcation of the hoof directly below; to which, from its ordinary situation, the name of *false quarter* has been given. This is not, therefore, in itself, a disease; but the *effect* of disease; or, possibly, simply of injury. The appearance it assumes is that of a gap or indentation in the side of the wall, lengthwise, along the bottom of which runs a narrow cleft or fissure, commonly filled with horny substance, marking the line of separation in the formative structure—the coronary substance. Either from the weight imposed upon the quarter from above, or the jar it sustains in action, the fissure occasionally splits asunder and opens, and perhaps bleeds, from the rupture of some small blood-vessel in the laminæ. In this manner, or from dirt or grit getting into the breach, or, as James Clark says, from the tender and soft parts being squeezed between the divisions of horn (from the circumstance of the breach widening every time the horse sets his foot upon the ground, and closing again when it is lifted up), inflammation may be excited in the sensitive laminæ immediately underneath, and pus form and ooze through it. Under such circumstances, lameness will exist; though, so long as the fissure remains undivided and undisturbed, the animal seldom betrays pain or even inconvenience from it.

A REMEDY for false quarter, at least a *radical* one, is not to be found. When once a division of any sort has taken place of that substance (the *coronary*), from which sprout and grow the fibres composing the wall of the hoof, no human art can effect a union such as originally existed: there will always be a separation in its *organization*—in the *roots* of the horny fibres, and consequently for ever remain a division in the horny fibres themselves. A false quarter, therefore, not only renders the horse having it subject to occasional lameness; but, in reality, considerably weakens that side of the hoof, insomuch that it becomes unable to support (that which originally was) its due share of the burthen of the body.

PALLIATION.—Though it be an evil, however, that does not admit of *cure*, it is one we may do much to palliate. Proceeding on the principles of imposing as little weight as possible upon the weak quarter; and, at the same time, of defending it to the extent practicable from *jar* or concussion, we

shall be perfectly competent to devise any means we may conceive best adapted to fulfil these ends. Up to the present period we do not seem to have hit on any better expedient than was practised by our professional forefathers. James Clark tells us, "we may so far palliate the complaint as to render the horse something useful, by using a shoe of such a construction as will support the weight of the limb without resting or pressing too much upon the weakened quarter; for which purpose a round, or what is called a barred shoe, will be most proper. The surface of the hoof on or near the diseased part may be cut down lower than the surface of the crust upon which the shoe is to rest; or, if the hoof will not admit of being cut down, the shoe may be raised up from the weak quarter." Should the hoof (as it often will) on either side of the fissure, grow stronger, and become more prominent than in other places, it must be rasped down at the time of shoeing; and at the same time the fissure itself, be it open or not, had better be plugged with *stopping*. In case, however, inflammation should be present—heat in the quarter or matter oozing from the cleft—a warm bath and a poultice, and some astringent dressing, such as *alum water*, or *nitric acid lotion*, should precede the application of the shoe and stopping. The best recipe I possess for *stopping*—by which is meant a composition, capable of being poured in a liquid form into any aperture or crevice in the hoof, and then becoming solid and effectual in keeping out dirt and wet—is the following:—

Take of Pitch .....	2 parts
Tar .....	1 ditto
Resin .....	1 ditto.

Melt and mix together.

When required for use, let a small quantity of this composition be melted in an iron ladle over a slow fire, and in the liquid state be poured upon the hoof. At the same time (should it be the *sole* that is to be covered) coarse tow may be laid on with the stopping; and, if required, a piece of leather over that: the whole being confined by a broad-web-shoe.

## FRACTURES.

This is a subject that has not received a great deal of attention from English veterinarians; although one which the French have treated in their usual systematic and copious style. The infrequency of the occurrence of fracture, together with the disadvantages under which its cure must in animals be at all times undertaken, will, in a great measure, serve to account for this seeming dereliction of duty on our part: though I really think myself, both these reasons are insufficient to shield us

altogether from the imputation of having given the subject less consideration than, even under these acknowledged disadvantages, it is deserving of. Although, generally speaking, perhaps a pistol-ball becomes the most advisable and politic measure we can adopt in a case of fracture ; yet, every now and then it happens that our patient is of such value or consideration to his owner that expense is no object, providing we can effect his recovery. And besides, whether it be advisable to undertake a cure or not, it at least is essential that we should understand what symptoms these accidents produce, in order that we may run no risk of confounding other diseases with them. It was not my intention, however, when I set out, to devote the space to them I have in the present work : nor should I, had I not found, in proceeding, that the subject, to do it justice, would not bear abridgment.

A FRACTURE (the technical appellation for a *broken bone*) is, in the language of the schools, “ a solution of continuity of a bone :” bone being, from its earthy fragile ingredient, the only part that can be said to be susceptible of this kind of accident.

THE CAUSES of fracture are mostly comprehended under the general head of *external force* : blows, kicks, falls, slips, &c. Though *muscular force*, independently of any such external agency, is capable of producing the same effect ; since it every now and then occurs that a horse that is cast for operation “ breaks his back,” i. e. fractures his spine in the act of forcibly struggling or kicking while in his fetters ; and we are told that the head of the femur and the patella have been broken in a similar manner.

KINDS.—In regard to the nature and extent of the injury done, a fracture is said to be *simple*, when unaccompanied with other injury ; *compound*, when the bone protrudes through the skin ; and, *complicated*, when other tissues or parts of importance are likewise injured, such as bloodvessels, nerves, joints, &c. As regards the manner in which the bone is broken, fractures are said to be *transverse*, *oblique*, or *comminuted* ; by which last is meant, splintered into several fragments.

THE SYMPTOMS of fracture will vary more or less in each particular instance ; and while, in some cases, they are too glaring to need any description, in others they are so obscure as to prove altogether insufficient for us to come to any determinate conclusion. *Crepitus* (the grating noise or sensation produced by moving or rubbing against each other the ends of the fracture) is one of the most unequivocal symptoms. Another is, the *separation* or *displacement* and *inequalities* of the fractured portions. A third is, *deformity* of the part : if it be a limb, *shortening* likewise. To these may be added, *lameness* or inability to move the part ; *pain* evinced on pressure ; *heat*, *swelling*, and *tension*, on the approach of inflammation.

THE PROGNOSIS of fractures in horses is generally unfavourable. The impatience of the animal under surgical restraints of any kind ; his great muscular powers ; and the difficulty we experience in many parts of his body in adjusting splints and bandages, form so many obstacles in the way of cure as seldom to permit us to hold out any very flattering hopes of restoration. The only counterbalancing circumstance we have to set against all this, is the vigorousness of his renovating powers : callus will form in a horse's constitution in twenty or thirty days ; while in the body of a man, the same will require forty or fifty days. The most propitious cases are those that call for the least artificial aid ;—those in which the bones are so situated that the fractured portions suffer little or no displacement ; such as the vertebræ, ribs, pelvis, and bones of the head and foot. Simple fractures of the cannon bones likewise often do well.

HOPELESS CASES include comminuted, compound, and complicated fractures of the worst descriptions ; unreducible fractures of the simple class ; secondary or repeated displacements ; indisposition to form callus ; subjects old, worn-out, vicious, or already constitutionally diseased.

THE TREATMENT OF FRACTURES IN GENERAL is to be conducted on three leading principles :—1st, To *reduce* or replace the broken portions in their natural position ; 2dly, To maintain them in their places until such time as their union is accom-

plished ; 3dly, To take such measures as may serve to prevent any untoward symptoms, and to be ready to counteract them; in case any should supervene.

REDUCTION is to be effected by processes of *extension*, *counter-extension*, and *co-aptation* or *setting*. Extension consists in pulling that portion of the fracture which is most remote in a direction from the body ; whilst by counter-extension that portion which is nearest the body is kept from following the other ; so that the two portions (which were, before, side by side) are now drawn into a straight line, in which position coaptation is readily effected. The sooner reduction is attempted after the accident, the less difficult of accomplishment is it likely to turn out. And, in general, an erect posture is to be preferred to a recumbent one : at least, there is so much danger in casting under such circumstances, that, if possible, it had better be avoided. The transverse fracture is the most difficult of reduction, though the most facile afterwards to retain in its place : the oblique fracture is with ease reduced, but troublesome beyond measure to maintain so.

OUR MEANS OF KEEPING FRACTURES REDUCED could probably be rendered equal to every emergency, did our patient possess intelligence enough, or even a disposition to suffer the apparatus to remain undisturbed : while, however, we have to contend with an animal intractable by nature, or rendered so by pain, and one of such prodigious muscular power as a horse, we shall meet with difficulties not to be surmounted but by opposing to them measures likely to prove even more injurious than the evils themselves. *Suspension*\* presents itself in such cases as a means of constraint, and at the same time of repose, which, to all appearance, holds out a prospect of success ; and, in its present improved form, a much better one than it has hitherto proved : withal, however, experience has shewn that the case often does best when the animal is left to himself. Compresses of tow, splints, and bandages, constitute the chief means of retaining the bones in their places, so far as the part itself is concerned ; to which occasionally is added an agglutinating

\* See the Frontispiece.

substance, such as will keep the skin moist and perspirable, and at the same time tend to abate inflammation. Some have proposed, however, to discard all this apparatus, and, instead, to cover the skin over the fracture with pitch, or any such strong adhesive application. Others have fired and blistered the places over fractures. In the adoption of our remedial measures, much must depend on the nature of the fracture, and more still on its seat.

### PARTICULAR FRACTURES.

My own experience in this department of veterinary surgery has been so limited, and English accounts, in general, of fractures are so extremely meagre and unsatisfactory, that I gladly avail myself of the copious writings of our literary neighbours, the French; among whom no one stands more deservedly pre-eminent as a veterinary author than Hurtrel d'Arboval, from whose work\* I propose making such extracts as seem practically useful: interlarding them, as I proceed, with such additional information as I can glean from English authorities.

**FRACTURES OF THE CRANIUM**, this French writer informs us, are by no means frequent: the skull itself being small, compared to the other parts of the head, the latter on that account oftenest receive injury. The ordinary cause of cranial fracture is a fall backward; when, it commonly happens that either the part receiving the blow—the *occipital bone*—is broken, or else that fissure or fracture is produced by the shock in the *base* of the cranium. Even in the former case, unless the fractured part be denuded, the diagnostic is difficult; and in the latter, in course, we must rely entirely on the symptoms present. These accidents are always serious and very often fatal; owing to the injury done to the membranes, as well as to the brain itself. Either from extravasated blood, or depressed bone, *compression* of the brain is likely to ensue; the symptoms of which are drowsiness and insensibility, staggering, pendant lips, dilated pupils, and sometimes disturbed respiration: convulsion may also come on.

*Treatment.*—Should there exist any indentation or irregularity in the cranium, such as to lead us to suppose the bone is depressed, we must cut down upon it, and apply the trephine upon the sound bone next to it, and after that, insert the elevator, and raise it into its place: removing at the time any coagulated blood or fluid that may happen to be lodged there. After which the flaps of skin are to be loosely drawn together with sutures, and a figure of 8 bandage, wetted with very weak spirits and water,

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\* "Dictionnaire de Médecine Vétérinaire, par M. Hurtrel d'Arboval."

applied over all. At the same time we must be prepared for any cerebral commotion that may arise. The brain may be compressed, or may have received a shock or concussion; or effusion may have taken place: all or either of which is denoted by loss of vision and sensibility, coma, involuntary discharges, &c. Should such symptoms come on immediately after the accident, they are to be ascribed to concussion: on the other hand, should an interval precede, they are probably owing to effusion. We must take care to place the animal in a situation where he is not likely to hurt his head, at the same time that he has his liberty; and to have him watched. Also to bleed him, purge him, restrict his diet, and administer clysters.—*Hurtrel d'Arboval*.

**FRACTURE OF THE ARCH OF THE ORBIT.**—Mr. Pritchard, of Wolverhampton (in vol. ii, p. 444 of “The Veterinarian”), details a case in which, from a blow over the eye, “The orbit was fractured from the superciliary foramen in a line through the zygomatic process of the temporal and malar bones, to the outer angle of the eye.” The fracture was in two pieces. “The skin was carefully drawn together over the orbit, and two pins of silver wire by the twisted suture closed this part of the wound, and had the effect of securing the detached portion of bone in its place. The lateral part of the wound was not closed.” Considerable inflammation ensued, but eventually the bone became re-united, and all did well.

**FRACTURE OF THE NASAL BONES.**—Blows, kicks, falls, gunshots, &c. may be the cause of this accident. It is commonly accompanied with laceration of the Schneiderian membrane and hemorrhage; with or without displacement of the bones themselves. When there is displacement, it is mostly *inwards*, seldom *outwards*: a circumstance that more or less impedes respiration; and especially when inflammation and swelling supervene; so that we are at times driven to the performance of bronchotomy\*. Indeed, the respiration is the first thing that calls for relief: after which we may proceed to the treatment of the fracture. Should there be any splinters of bone, they must be withdrawn through the wound in the skin; or, in case there be none, through an incision to be made, large enough for that purpose. In order to effect the reduction of any displaced bone, and with a better prospect of retaining it afterwards in position, *Hurtrel d'Arboval* recommends the trephine being applied in one or two places both above and below the fracture; after which, with the aid of the elevator and the co-operation of long forceps introduced through the nostril, the depressed bone may not only be raised again into its place, but confined there by means of substantial narrow bandages passed through the holes made by the trephine, and tied on the outside with the requisite tightness. The consecutive inflammation and swelling of the soft parts may be such as not only to

\* For an account of this operation, vide p. 167.



render the withdrawal of the bandage advisable, but even safe, on account of the support now given to the fractured bone by the tumefied parts all around. This plan of retention is preferable to the ordinary modes; for these do not always prove effectual; besides that they require the nostrils to be plugged, and occasionally the elevator even to be left in its place. Should the fracture happen to be at the lower part of the bone, it would be necessary to trephine above only, the nostril offering a convenient outlet for one end of the bandage. In cases where the displacement is outward (instead of inward) we are recommended to bandage the nose: an operation, to prove effectual, that must impede the motion of the jaws, and altogether prevent the animal from taking food. In place of this, H. d'Arboval recommends two supporters as splints being attached to the sides of the head-stall of a bridle or collar, imagining that they will give the requisite support, while they leave the motion of the jaws unconfined. As for any unnatural apertures that may be left, they need not give us much concern. They may be as much as possible covered by skin; or else some linen covering may be adapted and fastened over them through the assistance of the brow and nose bands of the halter or bridle. These fractures sometimes give rise to symptoms resembling glanders: such cases have been too often mistaken. Unreduced or ununited, they may occasion roaring or high-blowing, and to such a degree as even to be audible in the stable. In this condition they are also attended with foetid discharges from the nose; enlarged sub-maxillary glands; sometimes an exostosis on the bone; and within, a projecting asperous callus.—*Hurtrel d'Arboval*.

**FRACTURE OF THE SUPERIOR MAXILLARY BONE**, at the place where it unites with the lachrymal and malar bones, has been treated by Mr. Cartwright, of Whitchurch. The depressed part (occasioned by a kick from another horse) was forced down upon the sinus, and could not by the elevator alone be replaced. Mr. Cartwright, therefore applied the trephine, and with it removed the injured parts, which he found to consist of many small pieces. Adhesive plasters were then used to cover up the wound. In a month the parts were healed, without any symptom of glanders supervening.

**FRACTURES OF THE LOWER JAW** happen oftener at the symphysis than any other part. They owe their production to causes similar to those already recited, in speaking of the nasal bones. They are detected by grasping one side of the jaw, at its projecting angle, with one hand, and moving it in different directions, while the other is applied to the fore part, with a view of feeling for crepitation. When displacement exists, the fracture becomes more obvious. In cases of simple fracture without displacement, a containing bandage is all that is required. And as for the kind of bandage and support necessary on other occasions, that must depend on the situation, direction, kind, and form of the fracture. In many cases splints will be

required along the branches of the jaws. The broad head-stall of a bridle, furnished with several additional nose-bands and throat-latches, will often prove very serviceable. The animal must be nourished by injections (with the stomach-pump?) of gruel, hay-tea, &c. through the mouth. If one could elevate the animal's head sufficiently, without the risk of disturbing the bandages, one might pour these liquids through the nose: in cases of fracture of the symphysis the animal is unable to pick up his food with his front teeth, and there is evident crepitation. Here it often happens that a pitch plaster is all that is required. In other cases, however, we find not only simple fracture or division of the symphysis, but also separation of the two sides of the jaw to such an extent that the soft parts—the under lip, &c.—are also severed. In accidents of this nature the incisive teeth (at least those that remain undisturbed in their sockets) will serve as pivots to which we can attach ligatures to keep the bones together; containing straps and bandages must, however, also be used to aid in this retention, in whatever manner may seem best to the practitioner.—*Hurtrel & Arboval*.

In a fracture of this bone, Mr. Blaine "once succeeded very tolerably by making a strong leather frame that exactly encased the jaw," and which he made to adhere by means of pitch.

FRACTURE OF THE SPINE is what constitutes *veritable* "BROKEN BACK;" though there are other pathological conditions of the spine that give rise to similar symptoms. From the situation of the spine one would suppose that external injury, unless it were of a very violent kind, could hardly reach it; and, indeed, the results of practice tend to confirm this supposition: since these accidents are, in general, referrible to *internal* causes—to *muscular force*. Casting is now and then attended with this grievous occurrence; and without any fault or mismanagement on the part of the operator. It does not happen in the act of falling near so frequently as while the animal is down. While he is forcibly contorting his back and loins, and struggling violently with his hind quarters to disengage himself from his fetters, all at once his struggles cease, or become comparatively feeble, and probably at the same instant is heard a snap in his back. Though several instances have come to my knowledge where the practitioner has been unconscious of any accident until the animal has been released from his hobbles; and then, to the surprise of all present, found unable to get up; or if able to rise, without the power of walking to his stable; and one case was related to me in which nothing was perceived until after the animal had walked back to his stable; which goes to shew, that the vertebra, though fractured, may remain in its place for more or less time afterwards. The bone broken is commonly one of the posterior dorsal, or anterior lumbar vertebræ; and the fracture is almost always accompanied, sooner or later, with displacement, by which the spinal marrow becomes com-

pressed or squeezed, if not contused or even ruptured; whereby is occasioned paralysis, partial or complete, of the hind quarters, or even death itself. Mr. Hudson, V.S., Lincoln, relates a case (in "The Veterinarian," vol. ii) of a mare who, "while hunting, in endeavouring to clear a ditch of two yards wide, dropped in with her hind parts, but succeeded in getting out, and staggered a short distance further, when she fell, and could not be made to get up again." Mr. Hudson found the hinder extremities paralysed—quite insensible as well as powerless. The animal survived but a few hours. Mr. Hudson found a fracture in the anterior lumbar vertebra, with the spinous process torn from its body, and pressing on the theca vertebralis, where was much coagulated blood. The lumbar vertebræ were, it appeared, all more or less previously ankylosed together, and every one of their transverse processes was broken about its middle: "which," as Mr. Hudson justly observes, "must have been occasioned by the action of the muscles covering these parts."

**FRACTURES OF THE RIBS** are not always discoverable: in such of the anterior ribs as are covered by the fore extremity, it is impossible to detect fracture; and, likewise, those placed posteriorly are thickly enough covered by muscle to render its detection very difficult. Those most subject to fracture are such of the true ribs as are seen behind the elbow: the false ribs, from the yielding motion they possess, are much less liable. The ordinary *causes* of these fractures are, kicks and blows, either from the shoeing-smith's hammer or the stick, and falls upon the chest, in leaping especially. The fracture happens almost always about their middle, and in the true ribs is commonly oblique. They are occasionally broken into splinters; and these, should they be directed *inwards*, may seriously wound the pleura or lungs. The way to detect these fractures is with the fingers to trace the rib through its whole length; and should there be any irregularity, to press upon each fragment alternately, in order to elicit crepitation. The absence of any displacement, the corpulence of the subject, and any consequent tumefaction that may exist, may considerably obscure the nature of the case, although there may be every reason to suspect the presence of fracture.

*Treatment.*—Simple fracture, without displacement, requires nothing more than a broad roller, which is to be made sufficiently tight to prevent any motion of the ribs; thereby compelling the animal to carry on respiration with the diaphragm and abdominal muscles exclusively. Should the fractured parts project outwards, place opposite to them a compress, underneath the roller. But when they point inwards, we hardly know what to do to restore them to their position, and still less to retain them therein. The only plan appears to be, to cut down upon the parts, to *set* the rib; but, then, how are we to fix the broken parts from relapsing inwards? How to prevent air getting into the chest? In general, we must trust to the bandage round the chest: it not being advisable to make any artificial wound; and

such means as are proposed for a man under such circumstances being ineffectual in horses. At the same time we must attend to any symptoms of constitutional or pulmonic irritation that may arise; and be ready to combat them with the fleam, and such medicinal means as may appear requisite.—*Hurtrel d'Arboval*.

**FRACTURES OF THE PELVIS**, though rare, yet when they do occur are apt to be of serious moment, from the injury likely to happen not only to the surrounding external soft parts, but to the important organs contained within. The *causes* must be violent that can occasion these accidents: heavy blows, falls, &c. When the fracture is internal we have no means of discovering it, notwithstanding it be followed by suppuration, caries, and even gangrene: though when it is external we discover it at once, from the change in the form of the hip. In some cases all three bones of the pelvis are fractured, rendering one hind quarter, from want of support, longer than the opposite one, and dragging on the ground. When it is the projecting spine of the ilium (the part that forms the hip) that is broken, and not completely through, union will soon take place again. In the case of complete fracture, however, the broken piece is separated by the action of the muscles attached to it, and its asperities may do much damage. Here the severed portions had better be extracted, and the case afterwards treated as a common wound. Fractures of the pelvic cavity are constantly fatal, on account of the excessive pain they occasion, along with the consequent inflammation which soon seizes the pelvic viscera, and is likely even to run on to gangrene.—*Hurtrel d'Arboval*.

M. Levrat relates a case (see "The Veterinarian," vol. vii) of a mare who fractured the right side of the pelvis at the ilium, near the cotyloid cavity, in leaping a wide ditch in hunting. The lameness occasioned was such that the toe of the foot scarcely touched the ground, as long as progression was at all rapid: but in slow paces the foot was placed flat down, though the limb was moved forward with great difficulty. By applying the right hand to the fractured part, and seizing the stifle with the left, he felt a movement of part of the pelvis, which enabled him to determine the existence of fracture, and that it was unaccompanied with displacement. The mare was kept in a stall for three weeks; then permitted to go loose in a box. In two months she was mounted and exercised at a foot-pace. After another month she was quite sound, and fit for the hunt again.

Fractures of the sacrum require the same treatment as

**FRACTURES OF THE BONES OF THE TAIL.**—They are both, in general, easy of detection, by tracing the spinous processes from above downwards with the fingers. Their coaptation is effected by raising the tail, and maintaining it in the erect position either by a crouper constructed for the purpose, or by means of pulleys. In twenty-five or thirty days callus will have become sufficiently matured to give the tail its liberty.—*Hurtrel d'Arboval*.

**FRACTURES OF THE BONES OF THE LIMBS** may, in general, be regarded as incurable, especially those of the scapula, humerus, femur, and tibia; on account of the difficulty there is in effecting their reduction, and the impossibility of keeping them, when reduced, in their places, or, at least, of preventing the muscles from constantly moving them. Too often, indeed, the fractures of the bones below these are equally hopeless cases, if we except the pasterns and coffin; notwithstanding that there are many instances on record of fractured legs doing well.—*Hurtrel d'Arboval*.

**FRACTURES OF THE SCAPULA** are rare, as well on account of the mobility of the bone as the protection it receives from its muscles. Fracture of the neck of the scapula is the most common form in which we meet with this accident. It may be either longitudinal or transverse: in the former case the glenoid cavity will be split in two. Such an accident proves extremely difficult of detection. The animal is dead lame, and bears little or no weight upon the limb, rather dragging it after him as he walks than putting it forward, and leaping as it were to get on, if at all hurried. With the hand placed upon the point of the shoulder at the time that an assistant is moving the limb in various directions, one may possibly find crepitation, Godine relates a case in which the scapula was fractured through its body. He saw it on the second day, and found that effusion appeared to have preserved the fragments in their places. The nature of the accident was made manifest by a grating noise whenever the shoulder was moved. Godine covered the shoulder and arm with a thick layer of pitch; and afterward applied a linen bandage after the manner of the figure of 8 across the shoulder, and around the neck, withers, and elbow, thereby in a measure fixing the shoulder to the chest. The horse after this was turned into a paddock. On the twenty-fifth day he bore lightly on the limb; at which time the dressings were renewed. The shoulder had wasted so much, that the callus was perceptible. On the fifty-second day the dressings were entirely removed. The animal was still very lame. The shoulder was fired. Four months from the accident, the animal did not walk lame, but still halted in his trot. The callus was no longer perceptible.—*Hurtrel d'Arboval*.

**FRACTURES OF THE HUMERUS**.—Short, thick, and strongly as the *os humeri* is, and without the exposure and mobility which characterize its fellow in man, still it is not altogether exempt from accidents of this nature. The fracture is mostly oblique, and sometimes runs from one end of the bone to the other. It is as difficult of ascertainment as fracture of the scapula: locomotion is equally impeded, and the lameness quite as great. To discover crepitation, keep the hand upon the part while the animal is made to walk; or else during the time that an assistant moves the limb about. Generally speaking, fractures of either of the bones composing the shoulder (the *scapula* and *os humeri*) are hopeless cases. Any recoveries

that may have ensued, are to be attributed more to natural effort than to any aid art is capable of affording. Notwithstanding these considerations, however, should the animal be a very valuable one, and the fracture neither of long duration nor complicated with displacement nor much lesion of the soft parts, we may (even if it be only for practice sake) set about a trial at cure. Cases of cure are related of fractured *humeri*, in which the horses were kept suspended during the time, and splints and bandages applied around the limb. One veterinarian had the pavement taken up in the stable and dug a hole in which, during suspension, the fractured limb hung unmolested, while the others touched the ground.—*Hurtrel d'Arboval*.

FRACTURES OF THE ARM are more frequent than those of the shoulder. The separation is almost always an oblique one, and commonly commences about the lower third of the bone. It is readily discovered by the mobility perceptible in the bone, and by the deformity and shortening of the limb, providing there be displacement. In this case the obstacles to recovery are not so great as they are in that of the shoulder. Reduction here is practicable. Still, when the fracture is oblique, and there is much displacement, although one effects coaptation, the difficulties of keeping the bones in position are extreme, their tendency being so overbearing to slide over each other. Four splints will suffice when the displacement is not considerable, one for each surface: the external one being long enough to reach above the joint of the elbow, while they all four extend, below, as far down as the middle of the cannon.—*Hurtrel d'Arboval*.

Mr. Gloag, of Londonderry, has furnished us with an instructive case of this fracture (in "The Veterinarian," vol. iv). A cart-horse, while grazing with others, received a violent kick a little above the knee; which immediately lamed him, though he was still able to walk and managed to get home. The next day, on being turned in the stable, the leg suddenly gave way; a circumstance that rendered the fracture obvious to all. It was a simple fracture of the radius, about an inch and a half above the knee. The ends of the bone could be distinctly heard grating against each other, both in advancing the leg and turning it sideways from the body. The animal was placed in a sling, but not raised off the ground. The ends of the bone were placed in apposition; and lard was smeared over the entire surface. Then some thin slips of green wood (which had been immersed in boiling water until they could be bent to the shape of the knee) were placed on all sides of the joint. In about a fortnight the animal became very restless, though the bone was uniting. In six weeks he was taken out of the slings, very much emaciated, and with considerable ossific deposit about the knee. At first he knuckled over on the pastern, but he gradually regained his strength, and, with the exception of turning the leg a little outward in progression, he became as useful as ever for common purposes.

FRACTURES OF THE ELBOW are known at once by the mobility and

looseness of the (olecranon) process constituting that part, and by its being drawn up by the action of the extensor muscles of the arm. The animal halts exceedingly; indeed, he can no longer extend his arm; but trains the foot after him upon the ground. When complete, this fracture ordinarily turns out incurable; there being so much difficulty in keeping the parts approximated, owing to the perpetual action of the extensors on the olecranon. When the separation is not complete, there may be a chance. The first thing to be done is by means of a dossil of tow, or sort of cushion, interposed between the elbow and the side, to keep the olecranon out, in its place, the displacement always being inward. Splints are afterwards to be applied to fix the contiguous joints of the limb; upon which bandages must be wound around the elbow and chest, in such manner as to confine the whole mass compactly together.—*Hurtrel d'Arboval*.

**FRACTURE OF THE FEMUR.**—Short, and strengthly, and moveable, and protected as this bone is, yet does fracture of it now and then occur; and not only from external violence, but from extraordinary efforts or kicks on the part of the horse himself: at least, we are informed by some French authorities, that in this last manner the *head* of the bone has been severed. Let what part may be broken—head or body—it is an accident whose nature must at all times be obscure, and often impossible of detection with certainty. Whenever its presence is ascertainable, or even, every circumstance considered, presumable, the sooner the unfortunate subject is shot the better.—*Hurtrel d'Arboval*.

Mr. Dick has favoured us with an interesting case of fracture of the inner condyle of the femur. A mare, in leaping a sunk fence, had wounded her stifle to the extent of an inch and a-half, across the front of the articulation: a hard body was felt in the wound with a probe, which proved to be the fractured portion of bone: it having escaped from its situation, towards the inside of the stifle, where it was retained by a portion of ligament. The isolated situation of this fragment, the difficulty or impossibility of replacing it, and the little vascularity of its connexions, rendering union improbable, Mr. Dick resolved to remove it. This he did by enlarging the wound, and dividing the portion of capsular ligament which still attached it. It proved to be the inner condyle. The wound was sewn up, and adhesive straps applied. Considerable inflammation followed, and some fever; all which, however, under Mr. Dick's judicious management did well. "From the fifth day, however, she gradually improved: and although in this case one of the largest articulations in the body was laid open, and a part of the articular portion of the bone removed, the wound healed in so rapid a manner, that in three weeks the mare walked without lameness." At the end of another three weeks, "she trotted several times along the stable yard, apparently sound, with the exception of moving the limb in a slight degree wider than usual; and so completely had the part recovered, that had it not

been for the small scar which remained of the wound, a stranger would not have known that any accident had taken place."

**FRACTURE OF THE PATELLA** is rarely seen. Lafosse mentions an instance of it, which he ascribes to a kick from another horse; though he says it may occur through self-muscular effort. In whatever manner it may happen, however, and whether it be transverse or longitudinal, it is in all cases to be regarded as incurable; and for two reasons:—In the first place, because we are not sure that *bony* union would ever ensue; and, secondly, because we possess no means of keeping the divisions of the bone in apposition for the time required.—*Hurtrel d'Arboval*.

**FRACTURE OF THE TIBIA** (the true thigh-bone of the horse) is not so rare in its occurrence as either of the two last-mentioned fractures. It commonly happens through the lower third of the bone; and is then almost always transverse, and perfectly obvious. When higher up, the fracture is mostly oblique; and, being covered by muscles, is less manifest: nevertheless, the shortening and deformity of the limb, the unnatural motion of the injured part, and crepitation of it, render its nature plain enough. This high oblique fracture is incurable: such is the power of opposition the muscles are capable of exerting, that we not only are incapable of making the necessary extension, but, when reduced, quite at a loss for means to fix the fractured parts together. However, when the fracture is transverse, and low down, in that part free from so much muscle, not only reduction turns out less difficult, but even permanent coaptation becomes practicable, providing we have a suitable apparatus. We shall find room enough to apply four splints on either side, having first nicely encased the limb in tow, stiffened, and afterwards stuck to the surface, by some adhesive substance. Over and above these usual means, some have added a bar of iron, fitted and extended from the thigh to the foot, and then fastened to the toe of the shoe. Wherever success, however, in these cases has crowned the laudable efforts of the veterinarian, it has but too often happened that the animal has recovered but to be a cripple for life. The undertaking, therefore, may with every reason be regarded as a hopeless one.—*Hurtrel d'Arboval*.

Even of so large and palpable a bone as this, however, a fracture may not only be in the first instance overlooked, but exist for several days without shewing itself, or being detected, as the following interesting cases will shew. They occurred to Mr. Trump, of Merthyr Tidvil. A large cart-horse came from his labour very lame of the near hind leg, without any visible sign of injury. The foot was searched, and nothing further was done. He stood for several days in the stable, and was then turned out; and was afterwards discovered with the limb dependent from a fractured tibia, just above the hock. A mare came home from a journey of seven miles very lame, with a slight mark or scratch on the inside of the thigh. A few days after, the



tibia was found very obliquely fractured. A draught-horse had been lame for seven or eight days; there was a slight scratch inside the thigh, and some little swelling upon the hock. Mr. Trump had twice searched the foot. The lameness continuing, he was turned to grass, when, in two or three days, he shewed the tibia broken, at the part mentioned to have received a blow.

**FRACTURE OF THE HOCK.**—Mr. Cartwright ("The Veterinarian," vol. iii) was sent for to a two-year old cart colt that had hurt his hock a few days before, by leaping at some rails, and getting his leg between them, his body hanging over on the other side. It proved a case of simple horizontal (transverse) fracture of the *os calcis*, about its middle. A splint was contrived to reach from the middle of the tibia to that of the cannon bone, upon the front of the limb; underneath which was applied a charge, and the whole, then, well padded and bound together. He was kept quiet in the stable. In two months after, the hock was fired. It is now perfectly well, with the exception of a little enlargement in the place of union.

**FRACTURES OF THE LEG OR CANNON** are more commonly occurring than any we have been considering, in some measure owing to its length, but more to its exposed, unprotected situation. The fracture is commonly transverse, and, in general, too obvious to our senses to require any description. Reduction is not always so easy; but once effected, any force that would otherwise separate them, now only tends to strengthen their apposition. In some cases it happens that the force we are able to employ, in order to make the necessary extension and counter-extension, turns out so inadequate to the purpose, that we are forced to have recourse to a sort of windlass to assist us. We shall require four splints, one for each surface; and they ought to extend from the foot to above the knee or hock (according as it may be a hind or a fore leg). Girard disposes his splints in such manner that the *point d'appui* of the limb becomes the part above the fracture. He accomplishes this by using splints of different lengths, and allowing the longest of them to project beyond the foot, for the animal to bear his weight upon: which being fixed to the parts above, the weight in this manner becomes transferred to them, at the same time that all motion is prevented in the parts below. Ingenious, however, as this contrivance evidently is, unfortunately it is only applicable to horses that are very quiet and tractable. D'Arboval conceives this apparatus might be further improved by letting those splints that projected beyond the foot terminate in a sort of patten-shoe, upon which the animal could rest with more ease than upon the ends of the splints: it need not descend further than half an inch below the foot. In the cases of two foals, D'Arboval, after having properly set and bound up their legs, kept them standing up (racked up, to prevent their lying down) in stalls for about ten days, and afterwards turned them out. In both, the frac-

tures united: one became quite sound again. In the other, from the splints getting disturbed, the callus grew into an exostosis, which permanently lamed him.—*Hurtrel d'Arboval*.

A singular case occurred to Mr. Rickwood, of Bedford, viz. fracture of both fore cannon bones ("The Veterinarian," vol. iii). "A black mare, matched to run at the ensuing races, was, by way of training, galloped round the course until she was completely exhausted:" "the poor animal was reduced to the utmost distress; and both metacarpal bones, each more than three inches above the fetlock joints, snapped short. The fractured ends protruded through the integuments, and the sufferer moved several yards upon them before she fell."

I know one or two old practitioners who are in the habit of treating these cases in a very summary, and, at the same time, very successful manner. They employ such common support with splints and tow and bandages as the case seems to require; and then the animal (with his leg bound up) is turned out, season permitting: otherwise, turned loose into a yard or box, where there is not much straw to incommode his movements. He will take special care not to impose weight upon his fractured member; and, providing we have well secured the parts, nature will generally perform the rest.

**FRACTURES OF THE PASTERB.—**Short, strong, and moveable as the pastern bone is, yet is it not exempt from fracture, which is commonly occasioned by a violent effort or shock, when a horse makes a false step or stumbles, and tries afterwards to save himself from falling, or when the foot becomes locked in a wheel-rut, and the animal is compelled to exert great force to extricate it. The diagnostic of fractured pastern is easy enough. The horse bears no weight upon the limb; or, if urged to walk, the fetlock bends down nearly to the ground, and the toe turns up, in consequence of the weight being all thrown upon the back part. Take up the foot, move it from side to side and rotate it, and crepitation becomes distinct; though we must take care not to confound this with the noise made under similar circumstances by the pastern joint. These fractures are not free from danger: should the separation be longitudinal, as very often happens, it will extend into the joints above and below, and most likely be followed by anchylosis. Nevertheless, this is a fracture most readily reduced, and as easily maintained in coaptation. There are very many cases on record of recovery from fractures of this and the coronet bone. First of all, a bandage, dipped in some adhesive mixture, is to be applied from the coronet to the middle of the cannon. Upon this surface, wet pasteboard is to be moulded, and afterwards contained with a linen bandage. Four small splints are now to be laid on, one on each side: filling up the hollow places with tow, in order to give them an equal bearing; and afterwards binding them on with broad tape. All this, however, occasionally proves insufficient to arrest the play of the joints; and therefore we are forced to place four additional

splints (made of oak) thicker and broader, over these: taking care, however, before we do so, that the hollow between the fetlock and the foot is sufficiently padded and bandaged for these last splints to make complete pressure upon the pasterns. Indeed, they ought to extend to the knee or hock. It is a good plan also to include each splint, as it is laid on, within a fold of the bandage, since it serves to keep them in their respective places, and at their proper relative distances. We must do all we can to prevent the horse from throwing any weight upon the affected limb; at the same time it will turn out greatly to his disadvantage should he keep the limb flexed all the while; for that will tend to produce a shortening of the flexor tendons, and consequent knuckling of the limb. Lameness sometimes continues long after recovery: it may turn out permanent.—*Huxtrell & Arbouzel*.

An extraordinary case of this fracture is mentioned by Mr. Fuller, of Cambridge (in "The Veterinarian," vol. iii). Mr. F. was summoned to attend a horse that had fallen suddenly lame while hunting. The case was at once obvious. The horse was destroyed; and on examination the pastern bone was found "fractured in every direction, and at least into thirty pieces. The capsular ligaments of both pastern joints were dreadfully lacerated, and the nerve of the inside divided. That which makes the case so singular is, that the horse (who was aged) at the time of the accident was cantering at a very steady pace upon the high road."

FRACTURE OF THE SESAMOID BONES seems comparatively rare. A case occurs in "The Veterinarian," vol. v, for which we are indebted to Mr. Harris, jun., V.S., Preston. The horse was "a strong coach-like animal, intended to have run a match at a petty race;" for which end, "the parties thought they would give him some preparation, as far as a gallop or two. He had not gone above a hundred yards before he came down headlong; and it was with great difficulty he could be led home, a distance of two miles." There was considerable tumefaction of the affected fore-leg, great pain in attempting to walk, and he went nearly on his fetlock. "On handling the parts, a crepitus was very distinct; but whether arising from effusion or fracture Mr. Harris could not decide, for to the feeling it was posterior to the metacarpal and head of the pastern." Next day "the swelling was immense." The day after, from the weight being thrown upon the fetlock, splinters of bone had worked their way through the skin. The horse was now destroyed. On examination of the limb, there was effusion and extravasation found as high up as the knee. "The inner sesamoid was shivered to atoms; some portions of bone adhering to the ligament, some loose. The outer bone remained entire." Mr. Harris's opinion was, that the fracture was caused either by a blow from the other leg, fore or hind; or from sudden and extraordinary stretch of the suspensory ligament.

FRACTURES OF THE CORONET BONE happen from the same causes as occasion those of the pastern. These are commonly longitudinal, running

into the joints above and below, and splitting the bone into several pieces. The accident may occur in two or more legs at once. Fromage de Feugre has seen this bone, in the two hind legs of a horse, split irregularly into three pieces, in an oblique direction, from before backwards, and from without inwards. On another occasion, he found it split into four pieces. Henon has witnessed the bone broken in all four legs; and the one the least divided was severed into four pieces; in the other limbs, the largest piece not exceeding in bulk a hazel nut. The same person informs us that a horse, in stumbling, fractured the bone into seven pieces, two of which penetrated the skin. Ensnconced as the bone is within the hoof, surrounded by the fatty frog, and fenced laterally by the cartilages, we have but little direct, and are therefore compelled to receive presumptive, proof of its fracture. The symptoms that will assist us are, extreme lameness, inability to bear any weight, and sometimes even to raise the lame limb, which the animal cannot do without crouching behind—should it be a hind leg—in such manner as even to lead one to believe he has been hurt superiorly. So long as this fracture is neither compound nor complicated, it will unite without any of our aid; at least, nothing further is required than a bandage dipped in some adhesive matter. The horse, however, continues lame a long while; as long as the horn round the coronet squeezes the (tumescent) soft parts; and, indeed, until the old horn is replaced by new. Should anchylosis follow, his lameness will be perpetual.—*Hurtrel d'Arboval*.

FRACTURE OF THE COFFIN BONE is a case difficult of development, we are obliged to depend so much on presumptive symptoms. The animal halts exceedingly, the foot is hot, and the pain extreme; and there appears no evident cause for all this. It is not so serious an accident as it has been commonly represented. No displacement can possibly take place of the fractured portions; and as for weight being imposed upon them, the pain will prevent that. Moreover, in such a spongy, porous, vascular bone as this is, union will be more prompt: only that the callus, accompanied as it so often is with deformity and prominence, will be likely to press upon the soft parts around, and in that way keep up the lameness. It has been recommended, with a view of counteracting this, to make some grooves or breeches in the hoof, or to thin the wall: such, however, would rather tend to produce contraction than expansion. All that we can do is, to thin the sole to the utmost, draw blood from the coronet by scarification, and keep the foot in warm baths and emollient poultices. In some cases, unsoling (drawing the sole) is advisable.—*Hurtrel d'Arboval*.

Buried as the coffin and navicular bones are within the hoof, out of the way of all external injury, and, indeed, of muscular force as well, fracture of them cannot proceed from the ordinary causes. How is it, then, fracture does happen? In this manner:—In the healthy foot, in consequence of the elasticity of their connexions, these bones yield or spring under the impres-

sion they receive from the bones above, and thus are enabled to bear great weights, and sustain violent shocks without injury: but disease in the foot is found often to destroy this elasticity, from producing the conversion of that which was ligament or cartilage into bone; the result of which is, inability any longer to receive the same weight and concussion without risk of fracture. Besides which, the physical strength of the bones themselves is often very materially reduced from the effects of disease in them. And horses that have undergone the operation of neurotomy more frequently meet with this accident than others; because they batter their senseless feet down with a force which, under similar circumstances, pain would forbid the others doing.

FRACTURE OF THE NAVICULAR BONE commonly proves to be the sequel of caries of its under surface, which has so weakened its substance as to cause it to give way the first time any sudden impression is made upon it. The fracture is *transverse*; that being the course commonly taken by the ulceration in the bone. Though this is the common mode in which the accident happens, anchylosis of the bone, and consequent loss of its ligamentary or elastic connexions, may lead to the same result. In other cases, both these predispositions appear to be operative. Formerly, this fracture used to be accounted a rare occurrence: the introduction of neurotomy, however, has made us better acquainted with it. I shall have occasion to return to this subject in speaking of navicular-joint disease.

## DISLOCATIONS.

These are accidents of less frequent occurrence in horses than fractures, and of a nature, generally speaking, even still less remediable: they do, however, occasionally come under the veterinarian's notice, and therefore demand some portion of his study and consideration.

A DISLOCATION means a *displacement* of some bone in relation to some other with which it forms a joint or articulation: the same is also called a *luxation* or loosening. Should one bone have been forced *entirely* out of the socket—completely away from the correspondent articular surface of the other—the capsular and other retaining ligaments being necessarily ruptured, the dislocation is said to be *complete*; but should the displacement amount to anything short of this, it is denominated *partial* or *incomplete*.

THE CAUSES of dislocations in animals may be comprehended

under the divisions of *external* and *internal*. Outward force of any violent description may operate in their production ; such as blows, falls, wrenches, contortions, &c. : or they may be caused by violent action of muscles alone. In some cases, these causes appear both to have been operative.

THE SYMPTOMS by which dislocations discover themselves are thus faithfully portrayed by Hurlrel d'Arboval : " a change in the direction and appearance of the luxated part ; inability to put it in motion ; lengthening or shortening of it ; a hard prominence wherever the displaced bone happens to be lodged, and an evident deficiency in the place from which it has been dislodged ; a manifest difference between the joint affected and the correspondent one of the other side ; and a particular noise or sound elicited in moving the displaced parts. Acute pain on motion, and considerable tumefaction, are the ordinary concomitants of these signs."

THE TREATMENT of dislocations in horses can seldom be undertaken with any flattering prospects of success. The prodigious muscular force the animal is capable of exerting, and which he cannot by any known means be restrained from opposing to any efforts we may at the time be making to reduce his dislocated bones, constitutes of itself, in many cases, an obstacle not (in the present state of veterinary surgical science) to be effectually surmounted. Nor do I see any way in which we are likely to get the better of this opposition, unless it be by the influence of some such stupefying narcotic as the Indians are in the habit of feeding horses on, which they wish to render quiet while being shod—a kind of grass they call *bang*. Even had we apparatus of mechanical power sufficient to overcome any muscular force the animal could exert, yet by its employment should we probably do more harm, through violence to other parts, than effect good by reducing the displaced bones. To this grand difficulty others may be added, arising out of the circumstances of the case : such as the complication of dislocation with fracture ; the changes the parts undergo in the interval of time between the accident and any attempt at reduction ; the intractability, restiveness perhaps, of the subject of the injury ; the

peculiar construction and local relations of the joint luxated; the nature of the dislocation itself, &c.

THE CURE involves the fulfilment of three objects:—the reduction of the displaced bones; their retention afterwards in their proper places; and the counter-action of any disease, constitutional or local, to which the disturbance or injury of parts may give rise.

REDUCTION.—There are but few joints over which we can exert any effective power, unless the animal be cast. After which, the next thing to be done is to make the body a fixed point, from which any required extension can be made, at the same time that counter-extension is maintained, in a similar manner to what is practised for the reduction of fracture. Pulleys (such as are used in the apparatus for suspension\*) may be employed for this purpose; or, should they not be at hand, some contrivance after the manner of a windlass may be substituted. The direction, force, and maintenance of the extension must all be duly regulated by the veterinarian present, who is also the proper person to take on himself the guidance of the displaced bone back into its socket. The main thing he has to keep in view is, to apply his force in such degree, manner, and time, as seem best calculated to overcome the opposition of the muscles. Nor is he to relax in his efforts so long as ultimate success appears anywise attainable; but he is to renew and modify his operations according to circumstances, from time to time, until every hope seems extinguished.

THE RETENTION of the reduced bones in their places will not in general prove a matter of difficulty, providing the animal be kept in a situation where he cannot to any hurtful degree use or move the injured parts. In all probability, the reduction will be followed by inflammation and swelling, the solid interstitial effusion attendant on which will tend much to the accomplishment of this object: indeed, I know of no artificial means likely to prove in general so effectual; wherefore it is, in cases in which there is no appearance of any tumefaction of parts supervening, that we endeavour to excite inflammatory action in them by the

\* Vide Frontispiece.

application of blisters, firing, &c. There are cases, however, in which we may do some good by the clever application of bandages, or laced and padded caps and shapes made on purpose, and fitted to the part. Splints even may, occasionally, prove useful.

COUNTER-ACTIVE MEASURES consist in the employment of palliative or depletive remedies in cases in which the inflammation consequent on the local injury is such as to disturb the general health of the animal, or otherwise tend to harmful results. Bleeding, purging, fomentations, refrigerant and discutient lotions, &c. may be called for, either singly or in combination, and to an extent—at least as far as regards the venesection—to make either a local or a constitutional impression, depending on the nature and circumstances of the case.

### PARTICULAR DISLOCATIONS.

On the subject of particular dislocations, veterinary surgery seems even in a less advanced state than it is with respect to fractures; and this may, in some measure, serve to account for the paucity and comparative inefficiency of our remedial means: by cultivating the one, we shall probably augment and improve the other branch of knowledge.

DISLOCATION OF THE SPINE.—Dove-tailed together in the manner the bones of the spine are, and cemented as that union is by the fibro-cartilaginous substances interposed between their bodies, besides their ligamentous connexions, it seems next to or quite impossible for dislocation to happen between them unaccompanied by fracture. And, as the vertebral canal is entirely dependent for its volume and circularity on the correct juxta position of the vertebrae, any displacement of their bodies must necessarily endanger, more or less, compression of the spinal marrow; and this would give rise to paralysis, perfect or imperfect, of such parts of the body as received their nerves from the marrow posteriorly to the seat of injury. Nothing short of excessive violence can occasion an accident of this kind; though the spine, from blows, contortions, heavy burthens, &c. may be injured in other ways, and, on occasions, in such manner as to lead us to believe that dislocation exists. Several cases of this description are on record: at least, the absence of paralysis, and the apparent ease with which their recovery was effected, are circumstances that induce one to be sceptical in regard to the real nature of many of them. Most of them have occurred in the neck; and a very common way for such an accident to happen is by the



horse getting his head caught under the rope by which he is tied up, and then violently struggling to disentangle himself. Or he may get his neck twisted by turning his hind quarters round, during the night, underneath the manger. It frequently happens, that an animal in this predicament is in the morning found dead, having either "broken his neck"—probably both fractured and dislocated some one of the vertebræ—or else strangled himself. The following interesting case occurred to Mr. Spooner, of Blandford. Mr. S. was sent for, to attend a cart mare, that had "entangled her head under the manger; and, in her attempts to extricate herself, had got her head under her, and dislocated her neck. She presented a very dreadful appearance, her neck being bent in the form of an arch. Her head was hanging down almost to the ground, from which she could only raise it a few inches. On making her walk, she moved round in a circular direction, corresponding to the distorted shape of the neck. The side of the neck that had been rendered convex was much lacerated and injured. On moving her neck in a lateral direction, the fulcrum of motion appeared to be between the 5th and 6th vertebræ, pointing out the seat of injury." Mr. Spooner viewed the case as hopeless; but, with the consent of the owner, was willing to try what could be done. He bled her, but was forced to do so from the *arms*; and he gave physic, and bound deal splints upon the neck with bandages. The fever ran high. The head swelled considerably; which was relieved by lancet-punctures. On the 8th day, the mare appeared better, and was turned out. She managed to eat grass, and from this time gradually got better. In five or six weeks she could walk straight, and the neck had recovered much of its natural shape. A month after, she was put to work. The neck slowly but gradually righted.

**DISLOCATION OF THE SHOULDER.**—Frequent as this accident is in men, in horses it is but a rare occurrence. Hurtrel d'Arboval relates a case that came under his own observation. A horse drawing a cart heavily laden, down a paved and steep descent, fell down with great violence, and dislocated his humerus. He was immediately destroyed. The capsular ligament was found torn through, and the surrounding muscular fibres burst asunder, and in places lacerated. The head of the humerus was found, as it always is, lodged *in front* of the glenoid cavity. The accident is known by the deformity thereabouts existing; by the inability to move the limb; and by the fixedness, in particular, of the joint of the shoulder. When it has happened, it may be regarded as incurable, from the known difficulty of reducing the bone, and the still greater one of keeping it in its place. In a case Malthorez had, and which he succeeded in reducing, the bone so continually slipped out of its place again, in spite of every sort of containing bandage he could apply, that at last he spread a charge over the shoulder, and, at the same time, for half a dozen hours a-day, got a man to hold the bone in its place. On the 6th day, the bone kept its proper situation without further

assistance. An improvement on this, as Hurtrel d'Arboval suggests, would be to have several men to relieve one another.

**DISLOCATION OF THE ARM** cannot possibly happen, unless the olecranon process be broken off. I know of no instance of this accident myself: but, should it happen, complicated as it must necessarily be with fracture, I see little or no chance left us of recovering our patient.

**DISLOCATION OF THE HIP** seems to be oftener met with than any of the preceding luxations. Hurtrel d'Arboval tells us, it is likely to happen from a slip of the foot at the time that the hind legs are stretched out in the act of staling; and that, when it does happen, the displacement is commonly but incomplete: the head of the femur being thrown *backward*, and lodging upon the brim of the acetabulum. It is accompanied with rupture of the round ligament, laceration of the capsule, and breach in the cartilage by which the acetabulum is surrounded. The peculiar halting gait of the animal will attract our attention to the hip-joint in particular; and, by close examination, we shall most likely be enabled to see or feel the head of the femur moving, out of its proper situation. Any attempt at reduction, in this case, is an undertaking of the most formidable description: too often has the effort proved altogether unsuccessful; though even in that case it does not follow that the poor animal's state should be deemed altogether hopeless. In the course of time, it commonly happens in these cases that the head of the bone establishes a sort of socket for itself in its new situation, and thereby obtains, by degrees, very tolerable freedom of motion; at least, sufficient to enable the animal to do "slow work" with advantage.

Mr. Feron relates a case of dislocated hip. "The pain was so great that the animal could not stand erect, but for a few minutes; and when down, required seven or eight men to help him up." Mr. Feron cast the animal, and, "with unexampled difficulty and trouble, succeeded in reducing the bone." He then "applied the actual cautery on the joint;" and, lastly, "covered the place with a dressing composed of tar, spirits of wine, and vitriolic acid." The horse was after this turned out. In four months, "he could get up himself and walk tolerably sound; though at the trot he was still lame. But at the expiration of twelve months he was perfectly sound in all his paces, and remained so."

**DISLOCATION OF THE PATELLA OR STIFLE-BONE** is, of all, the most common accident of this description; at the same time that it turns out, when well understood, that which is of the most remediable nature. To this affection, in particular, the attention of the profession was first called by my cousin, Mr. Charles Percivall; from whose communication to "The Veterinarian" (contained in vol. i) I derive most of the information I am enabled, on the present occasion, to lay before my readers.

Mr. C. P. in the course of his practice, has met with no less than *eight cases* of dislocated patella,—“five of them within the space of little

more than two years, and during his residence in India;" a circumstance that leads him to believe it is a case "of more frequent occurrence in India than in this country; probably arising from the peculiar manner in which horses, in general, are tied up:" their heads being confined by side-ropes to pegs driven into the ground; while the hind legs are encircled with leathern straps, and confined by ropes in a similar manner to two other pegs, at about five or six yards distant from the feet. The dislocation seems to happen either in the act of lying down, or from some violent effort made in rising. On other occasions it happens out of the stable, either in consequence of some external injury, or of some sudden or lateral movement for which the muscles were at the time unprepared. In "The Veterinarian," vol. iii, a case is detailed by Mr. Godwin, of Lichfield, in which both patellæ were found repeatedly displaced, owing, apparently, to the low state of the animal's condition at the time.

*The Symptoms* of this dislocation, observed by Mr. Percivall, are, stiffened protrusion of the whole limb backwards; the pastern and foot flexed to their utmost, quite incapable of being straightened, and trailed along the ground when the animal is made to move; with perceptible prominence and tenderness of the outer side of the stifle-joint.

*The Reduction* of the bone is effected thus:—let an assistant carry the limb forwards and upwards, towards the abdomen, for the purpose of extending the stifle as much as possible; while which is doing, the operator is to place his hand upon the outer angle of the patella, and keep forcibly depressing that part, at the same time that he is endeavouring to tilt the bone forwards and upwards, in order that he may enable the extensor muscles to draw it back again into its place. Another mode of proceeding is with a side-line, or long piece of web, passed around the pastern and from thence carried over the neck, with which the foot may be forcibly drawn forward, and, at the same time, elevated to the point required. The sooner the reduction is attempted after the accident, the less difficulty is the operator likely to experience; though, generally speaking, it is not the replacing, but the *retention of the bone in its situation afterwards*, which is likely to occasion us any embarrassment. In one case that occurred to Mr. Percivall, the bone, after being reduced, slipped out again "half a dozen times within the space of ten minutes;" causing him "to despair of keeping it in its place at all." He, however, at length succeeded "by retaining the bone himself in its place for some time after the reduction." In another case the luxation returned in six weeks after replacement; half of which period the horse (being a trooper) had been performing his duty. In this instance, after getting rid of some concomitant inflammation existing about the parts, by bleeding and purging and refrigerants, Mr. P. blistered the stifle, which had the effect of preventing any relapse. When a blister fails, I recommend the firing-iron to be tried. In all cases, abstinence from motion

of any kind is indispensable: the animal should be kept racked up for ten days or a fortnight. If requisite, also, the hind legs may be fettered.

In all Mr. Pereivall's cases, the displacement of the bone has been *outwards*, a circumstance arising from the external condyle of the femur being less prominent anteriorly than the internal one. Mr. Cherry, however, relates an instance in the *Hippiatrist*, in which the dislocation was *inwards*; occasioning the limb to be drawn upwards.

DISLOCATION OF THE FETLOCK, we are informed by Hurtrel d'Arboval, notwithstanding the little that has been said about it, "*happens, perhaps, more frequently than others*," being producible by any of those causes to which violent sprains and contortions of the same part are owing. He tells us that the displacement may happen either forwards or backwards, inwards or outwards; and that it is to be reduced according to the rules laid down for dislocations in general, and then bound up with splints and pads and dossils of tow and bandages, and the animal afterwards turned out: he gives us, however, but little hope of restoring the case.

## BURNS.

These are injuries to which horses are exposed hardly on any other occasions than those on which their habitations happen to take fire. And should an animal be burnt, there is always more to be dreaded on the score of constitutional suffering, either from the immediate effects of the suffocating vapours he has been subjected to, or from the consequences of the mischief the skin has sustained, than on account of the parts burnt. In all cases, the local injury itself is of *secondary* importance. I shall close the subject with the following case, related by Mr. Feron:—

"In 1799, I was at Stratford-on-Avon, visiting the different quarters of the 13th Dragoons. About one o'clock in the morning, a private stable in which Captain Kent, of the regiment, kept two horses, took fire. I was called in a great hurry to render assistance. When I arrived, I found the two animals had been dragged into a field. They were apparently suffocated. They had in reality life; but that was all. I immediately set a farrier to bleed them from both jugular veins at once. I was not able to ascertain the quantity of blood drawn, for it flowed upon the ground; during which time I was employed rubbing their legs and belly with spirits of turpentine. A few minutes after, they began to recover. Afterwards they both took two doses of physic. One recovered in six weeks: the other was left affected with a hard cough which lasted six months."

## RABIES.

RABIES or *madness* is rare in horses, compared to its occurrence in dogs and the human species; for which, two reasons appear evident. The first is, that the horse cannot generate the disease within himself; at least, there is no instance of it on record: the second, that a dog or a cat, from whose bite the disease is alone producible (or likely to be produced), is probably less disposed to bite a horse than almost any other animal. Now and then, however, a case of this awful malady presents itself; and it is of the utmost importance that we should be prepared to recognize it, and in its earliest and mildest character too, in order that we may take immediate measures to prevent any disastrous consequences happening to the persons in attendance, as well as to any other horses or animals that may chance to be within reach.

There are two gentlemen, in particular, to whom the profession, and, indeed, the public, are under special obligations for most of the information we possess on a subject, the prosecution of which is attended with risk, and peril even, at times, of the most alarming description: I mean Mr. Blaine and Mr. Youatt. Both these writers disbelieve that rabies is producible in the horse in any other way than by inoculation.

**SYMPTOMS.**—"Its attack," says Mr. Youatt, "is most sudden. The horse will go out apparently well; all at once he will stop, tremble, heave, paw, stagger, and fall. Almost immediately he will rise, draw his load a little farther, again stop, look about him, back, stagger, and fall. This can scarcely be confounded with megrims, for the horse is not a single moment insensible; and, after seemingly recovering, possibly falls twice or thrice before he can be led home. The sooner he is led home the better; for the progress of the disease is as rapid as the first attack is sudden. In many cases, perhaps the majority of them, a state of the highest excitation speedily ensues: the horse kicks and plunges in the most violent manner; he is then quiet for awhile, recognizes his attendant, is sensible to his caresses, and looks most piteously at him. A rabid horse belonging to Mr. Keat pressed his head repeatedly against me; then, without the slightest notice, he plunged and fell. Sometimes he is mischievously disposed. He will furi-

ously seize and bite other horses, and even his attendants; and as Mr. Blaine well describes it, 'will level with the ground every thing before him, himself sweating, and snorting, and foaming amidst the ruins.'—Staggering and palsy of the hinder extremities soon succeed. I once saw a mare sitting on her haunches, and unable to rise, yet pawing furiously with her fore feet. The disease, however, quickly runs its course, and rarely extends beyond the third day. In two cases I fancied I saw something very much resembling hydrophobia. The thirst was excessive, but the act of swallowing was performed with a forced gulping effort, and suddenly the head was snatched from the pail with a strange contraction, a kind of *risus sardonius* of the lips."

THE INTERVAL BETWEEN THE BITE AND THE APPEARANCE OF THE DISEASE, is, according to Mr. Blaine, the same in horses as in other animals, "that is, from five weeks to three months: but I have observed," continues Mr. Blaine, "as in dogs, its attack is always quickest when the bite is received in the head."

THE MORBID APPEARANCES, in every case in which Mr. Youatt has had an opportunity of examining the animal after death, have been "inflammation on the glottis, and generally on the trachea. There has uniformly been inflammation in the stomach, and on the lungs, and in patches, as in the dog. Either the membranes or substance of the medulla oblongata have always been injected."

TREATMENT.—Should not his master himself speedily put an end to the animal's sufferings, Nature will. The disease, be it remembered, "rarely extends beyond the *third day*." What most concerns us, is, the *prevention* of the disease: supposing we are consulted on the case in the interval between the bite and the accession of its probable consequences. The bitten parts should, if possible, be excised, and the surface afterwards well seared with the flat part of a red-hot firing iron; which will answer the double purpose of destroying any poison that may have penetrated so deep, and of stanching the hemorrhage. Should there be any objection to the actual cautery, either on account of the nature of the part bitten or otherwise, make use of caustic: the *lunar caustic* is the best. Indeed, so efficacious has this latter been found to be in man, that, could we only be certain that every part of the tainted surface had been submitted to its operation, there would be little to apprehend in respect to the result.

## VENOMOUS BITES AND STINGS.

By these are meant such injuries as are produced by animals whose bite or sting proves by nature poisonous, and often fatally so, to others on whom it is in anger inflicted. Serpents, in particu-

lar, are known to possess this evil property: though in Great Britain we have but one indigenous of the kind—the *adder*; and that one, singularly enough, is never found in our Irish territory.

From the following account (extracted from the “Dorset Chronicle”) it would appear that the sting of the adder occasionally proves mortal:—“On Monday se’nnight, a horse, the property of Mr. Andrews, of the Britannia Inn, Castle Carey, whilst grazing in a field about a mile from the town, was stung by an adder; and so virulent was the poison, that the animal died in the course of an hour, in the most dreadful agony.” Mr. Blaine informs us, however, that “the accident is not often attended with fatal consequences; and that country persons, as a remedial treatment, merely rub the part with an onion, and force another down the throat.” “In more serious cases,” continues Mr. B. “the following will give relief:—spirits of hartshorn or turpentine, one ounce, mixed with a pint of olive oil. To a horse the whole of this mixture may be given, and some of the same kind rubbed into the bitten part.”

## Section V.

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### DISEASES OF THE SKIN.

SURFEIT	{	PRURIGO		HIDEBOUND
		ERUPTIONS		LOUSINESS
		TETTER, or		WARTS
		RINGWORM		GREASE
		MANGE		CHAPPED or CRACKED HEELS.

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### SURFEIT.

THE word *surfeit*—derived from the French verb *surfaire*, to over-do—is used, in veterinary medicine, to denote certain appearances or sensations in the skin which we know from experience to be among the consequences of excessive feeding. Horses standing in stables, full of condition, and but inadequately worked, are subject to heat and itching of the skin, and to occasional eruptions, which the groom never fails to attribute to “heat of blood:” a notion very much in accordance with the French appellation of “*ébullition*,” for the same disorder, and one evidently derived from the supposition that the blood was in some way or another the cause of it. The same notion, also, will be found to prevail in our present pathology of the case. We say that the animal, from high feeding and want of due work or exercise, becomes *plethoric*; by which we mean, he either accumulates in his system a *superabundance* of blood, or else makes it of too *rich* a quality for ordinary purposes; and the consequence is, that, by an effort of the vital powers, the redundancy comes to be thrown off in the form of surfeit or eruption; and in this manner, other and more serious evils averted. Hence it comes that surfeits and eruptions are commonly regarded rather as signs of exuberant health than of actual disease.



**PRURIGO.**—I employ this term (having no other so appropriate) to signify those hot and itchy sensations of the skin which it is evident horses must experience, and occasionally in a very annoying degree, who are eternally rubbing their heads or necks, manes, roots of their tails, hind quarters, &c. against any place in the stable affording them the opportunity, and thus rendering those parts bare, or, at least, in such a ruffled and worn condition, from continual friction, as clearly enough to indicate what has been going on. This is the simplest form of surfeit, and requires nothing, in general, beyond some modification in the stable regimen: bran-mashes in lieu of corn; green-meat, if it be in season; and additional work or sweating exercise. The itchiness itself may be very much relieved by using a lotion composed of half an ounce of sulphuric acid and a quart of water: with this, the parts rubbed are to be frequently wetted. Should this local treatment not succeed, draw four quarts of blood from the animal, and exhibit a brisk purge.

**ERUPTIONS** are those little lumps or *pustules* horses in high condition occasionally have break out upon their skin; constituting but a more advanced or determined form of surfeit. In general, their appearance is sudden and unexpected; and very often they disappear as suddenly. Sometimes they rise in almost every part of the body: more commonly they are partial. I have known the eruption vanish and re-appear from day to day, for several days together. A case of this description was treated by my father: the lumps were as large as marbles, but disappeared in the course of a few hours after their eruption; breaking out afresh on the third or fourth day following, and doing so for several successive days. The variable magnitudes of these lumps—some being small and hard, like little knots in the skin; others comparatively large and flattened and spreading—together with the differences observable in their appearance and disappearance; their origin and mode of termination; and other concomitant circumstances, lead us to believe they cannot all proceed from or indicate the same species of disorder. Hurtrel d'Arboval distinguishes two varieties of them—*partial* and *general*.

“ In the first, the lumps are few, diffused and isolated, and in nowise affect the ordinary state of health or spirits of the animal; though at times occasioning itching. They commonly last fifteen days or three weeks; sometimes much longer. They disappear by resolution, without leaving any marks of their existence; and even in so short a time, that the disorder may truly be called ephemeral. However, they do not always vanish in this way: now and then they become converted into abscesses, which burst and discharge a serous fluid, and afterwards become crusted over.”

“ In the second variety, the lumps arise all at once, and upon almost every part of the surface. They are irregular and unequal: some being small, some large. All of them are flattened, coalescent, and disposed in groups, without order of any kind, presenting often little vesicles from which issues a glutinous fluid, matting the hair, and forming incrustations. Added to this, the animal's health is disturbed. He is evidently unwell—dispirited, and more or less feverish. His appetite is impaired, his skin warmer than usual; the conjunctive and pituitary membranes flushed; respiration accelerated; pulse full and hard. Eruption attended with itching and fever may turn out serious, by occasioning some metastasis of a grievous nature, as frequently happens in young horses who have, during the previous winter, suffered from hard work and poor living. The most common metastasis is that occurring in the mucous membrane of the air-passages; and it is one likely to ensue when the eruption disappears as suddenly as it came.”

Commenting on these observations, I should say, that disordered health is by no means necessarily connected with the *general* eruption; on the contrary, that it frequently, if not commonly, comes and disappears without any ill consequences—without, in fact, any observable change whatever either in the health or condition or spirits of the animal. The same author informs us, that eruptions are apt, by unprofessional persons, to be

CONFOUNDED WITH FARCY-BUDS; though the circumstances of the farcy-buds being *subcutaneous*, disposed in lines at pretty regular intervals, like so many knots in a string, and being usually found in but certain situations in the body, will at all times enable us to make a distinction so important in practice.

THE CAUSE of surfeits and eruptions I have stated to be, in a general way, *plethora*. Young horses, and such as are in full condition, or that have recently come from poor to good keep,

are the ordinary subjects of it; and the spring of the year is the season in which we mostly observe it. I have known horses have it annually, on the approach of warm weather. Now and then it will break out after violent exercise, from suppressed perspiration, or too copious an ingurgitation of cold water while heated. It is said also to be an occasional consequence of indigestion, or of certain unwholesome kinds of aliment.

THE TREATMENT must be such as tends to relieve plethora, and to remove any inflammatory disposition that may exist in the system: at the same time the eruption itself should be as much as possible encouraged. In cases of simple evanescent eruption, nothing more is required, in general, than the substitution of a mash for a corn diet; green-meat, if it can be procured, for hay; chilled water; warm clothing and bandages; and additional walking exercise. Should the eruption evince a permanent character, or should it shew a disposition to relapse, it may become requisite to bleed and purge moderately; and these evacuations may be followed up by cooling febrifuges—antimony and nitre—mingled in powder with the animal's mashes. As Hurtrel d'Arboval truly remarks, however, when the lumps on the skin are bursting and discharging, the time for evacuating remedies seems to have gone by. We may then content ourselves with a cooling regimen, and the exhibition of alteratives; and sponge the surface with warm water: though, "should the skin require excitement," the same author recommends "frictions with camphorated spirits."

#### TETTER OR RINGWORM.

From the silence of English veterinary authors in general on this subject, one would feel inclined to believe that among the horses of our own country there could be no such disease: that a malady of the kind does occasionally present itself, however, I happen just now to have living evidence of in the case of a horse in my own possession. But as this horse did not come into my hands until the disorder had passed its acute or active form; and as such other cases as I may antecedently have had, have

occurred at a time when I was unconscious of the existence of any such distinct species of disease, I must acknowledge myself at this moment unprepared to draw up an account grounded on my own personal observation: I shall, therefore, have recourse to that authority which I consider the best on the subject—Hurtrel d'Arboval.

Tetter or ringworm—in French, *dartres*—is a specific cutaneous inflammation, ordinarily of a chronic character, occasionally intermittent, and almost always obstinate; distinguished by certain signs or appearances from other affections of the skin, but, in particular, by the circumstances of its occupying circumscribed patches of that texture, and by those places being separated by marked boundaries from the healthy parts around. Whether it be contagious or not, remains still an unsettled question: probably in some forms it is so; in others, not: the majority of evidence seems in favour of the latter opinion. It is a disorder to which all domestic animals are subject: but it occurs oftener among horses, sheep, and dogs, than among neat cattle and goats. In all animals, parts, and stages, we believe it to be essentially the same disease; though, from the slightest blush upon the skin to the deepest ulceration, and the modifications it undergoes in different species of animals—in the magnitude of the pimples, the aspect of the morbid skin and incrustations, the existence of ulceration, the shades of redness, the intensity of itching, and in the parts affected—we may observe differences sufficient to lay the foundation for several varieties of the disorder:—the *furfuraceous* the *squamous*; the *humid*; the *crustaceous*; the *ulcerous*.

THE FIRST OR FURFURACEOUS VARIETY, the least important of all, never runs on to ulceration. It begins by a numerous assemblage of pimples, so small as often to be to the eye imperceptible, with a slight itching, followed by the loss of the hair. The cuticle peels off in little white scurfy flakes, resembling particles of meal or bran; and if it be washed off, exposes the cutis underneath, reddened. The diseased places exhibit a circular figure, and have prominent borders, manifesting but little exudation, unless at the very beginning. They commonly occupy such parts of the skin as envelop bones; the prominences about the head, the forehead, the point of the elbow, the sides, the haunches, &c. This variety is more frequent than any of the others, and occasionally exists in combination with mange. However, it gives no cause for uneasiness: it does not appear to affect the general health. Animals that have it seem to enjoy even a better appetite, and evince a more than ordinary desire for copulation: circumstances explicable on the score of the sympathetic stimulation received by the digestive and genital membranes. Next to the horse, the dog is most

subject to this species of the disorder: it appears in him about the ears, eyes, point of the elbow, and hips.

THE SECOND VARIETY affects dogs in particular. In this, the pimples ulcerate and spread; occasion itching, and cause an ichorous, serous, viscid sort of matter, which mats the hair to such a degree, that one would imagine water farcy was present. The cuticle separates and falls off in large scales, either moist or dry and hard, crops of which succeed each other.

THE THIRD VARIETY consists in a multitude of pimples, flattened, and so unusually small, as to be hardly discoverable: these burst, and discharge an ichorous matter that concretes and forms incrustations upon the skin, of a greyish or yellowish cast, and thereby much augment the substance of the diseased places. Ulceration frequently ensues in consequence of puriform matter collecting underneath the incrustations. This variety is of tedious duration.

THE FOURTH OR ULCEROUS VARIETY has been observed in dogs.

Although we have little or nothing to apprehend from tetter, it often turns out a very intractable disorder when we come to essay to cure it; and especially when it has become inveterate through negligence or long standing. It is ascribed to a variety of causes, constitutional as well as local. It is very apt to make its appearance, in the spring and autumnal seasons, among horses that have suffered from exposure and bad keep; and will attack many at the same time.

TREATMENT.—Unacquainted as we are with the specific organic lesion to which tetter owes its existence, we have nothing to offer, *secundum artem*, by way of treatment. All our “remedies,” as they are called, are empirical; and few of them deserve that name. It is but rarely they succeed. We must attend to the general health and condition of the animal, and take care that his diseased skin is well washed with soap and water, as often as required; without which the dressings cannot take proper effect. Should the bare places exhibit inflammatory action, we must foment, and (if practicable) poultice them; and bleed and purge the animal. Sulphur ointment, empyreumatic oils, corrosive sublimate in weak aqueous solution, &c. may be tried. The ulcerous tetter is the worst to treat. Should not lime-water, or any of the escharotics or stimulants succeed, we must have recourse to the actual cautery. At the Alfort Veterinary School, good effects have been derived from the use of the liquor plumbi in combination with nitric acid.

## MANGE.

What in men is called *itch*, in animals goes by the name of *mange*; the word being a corruption of the French, *demangeaison*: though that only means the sensation—the itching created by the malady; the disease itself in that language being denoted by the term, *gale*. We believe that all quadrupeds are liable to an affection of this kind; though we rarely meet with it in practice, save in the horse, the dog, and the sheep. The most remarkable characters of mange are, the annoying itch it creates, and the bare scabby places it occasions on the skin. A mangy horse will rub himself against any part of the stable or yard where he may happen to be; he will even rub himself against his companions, should he be at grass or strawyard with others; and, by frequent and violent rubbing, will irritate and excoriate the diseased places, and thus considerably aggravate the malady. Though no part of the skin can be said to be exempt from mange, the places it commonly occupies are the neck, shoulders, withers, sides, thighs, and head. Professor Coleman attributes this predilection to the comparative thinness of the skin, and from the circumstance derives additional evidence of the analogy he advocates between itch and mange. Hurtrel d'Arboval, however, simply ascribes the partiality to the presence of adipose matter, and consequent looseness of the skin covering it. May not exposure and friction have some influence?

**SYMPTOMS.**—We seldom detect mange before it has made some considerable progress. There are but two ways, indeed, in which its presence is made known:—by the animal being observed to rub himself, and by the state of his skin; which latter circumstance is not likely to be noticed until the hair begins to come off. The disease is what is called an *eruptive* one. It commences in the formation of assemblages of multitudes of minute pustules or pimples whose summits gradually expand into vesicles, which burst and coalesce with one another, and thus by their united discharges form patches of incrustation upon the skin, wherefrom the hair loosens at its roots, and either falls or

becomes rubbed off from time to time, leaving the places at length bare, and the cuticle exposed, arid, and white: a lifeless state in which it desquamates in the form of branny scales or meal-dust. Upon the hairless patches may frequently be perceived small red spots: these are owing to the crusts being rubbed off the pustules, and the consequent exposure of the cutis in a state of inflammation underneath; though the violent disturbance of the crusts is likely to be attended with minute points of hæmorrhage, producing afterwards little bloody scabs upon the places. The roots of the hair would appear to be secondarily affected; for the coat does not come off until the disease has existed some time, and even then the stubborn adherence of some hairs in the very middle of the mangy places is often remarkable enough. In inveterate mange the skin undergoes still farther changes in its structure and properties, and none more observable than that of its loss of elasticity, and its consequent corrugation into harsh, hard, arid folds, especially about the neck: the additional circumstance of blood oozing forth from the bare places, which have now become wrinkled and of large dimensions, has induced some persons to christen this advanced stage of the disorder, the *red mange*.

THE INTRINSIC NATURE of mange (considering in general how much the disorder is under our control), matter of speculation as it has become, is interesting to us rather on the score of curiosity than utility in practice. It is a question the French veterinary writers never fail to moot and discuss with their usual methodicalness and ingenuity. Hurtrel d'Arboval informs us, "that at the present time there are two parties in this field of inquiry: one admitting of the existence of the specific nature of mange, without saying in what it consists; the other viewing the disease as dependent on the presence of animalculæ—minute insects to which they have given the name of *mites* or *acari*. There is also a third party, who assert that sometimes it originates in insects; though at other times the disease is *organic*. According to the researches of Bosc, Huzard, Latreille, Geoffroy de Saint-Hilaire, Duméril, Walz, and Saint-Didier, there can be no question about the presence of animalcules. Their observations go to shew, 1st, that on removing with a brush or any thing else the incrustations, or rather the kind of scaly dust produced by the dried pustules, and examining it attentively in the sun or any warm place, a person may distinguish, even with the naked eye (though to us it seems a difficult matter), little, organized, transparent, shin-

ing bodies, moving about with tolerable celerity, which are neither more nor less than *acari*, insects belonging to the same family as the *sarcoptes* of human itch. 2dly, That there is almost always to be discovered in places, within the substance of the skin, more or less *larvæ* of these animalcules. 3dly, That in the horse, the insect is large enough to be seen without the aid of a lens, in its travels over different parts of the mangy animal's body. After all, however, so unimportant to us in pathology is any part the insect may play in the disease, that we shall not even stop to inquire whether it exist as cause or effect; but rather side with Morgagni in opinion, who, though he does not question the existence of the psoric mite, doubts that all mangy pustules possess them."

**IDENTITY AND COMMUNICABILITY OF MANGE AND ITCH.**—Professor Coleman in his Lectures says, "Mange is the most contagious disease to which the horse is liable; more so than glanders. It certainly corresponds very much to the mange in dogs and the itch in the human subject. I have known horses to be attacked with the disease from being curried with the same comb as had been used about one that was mangy; and I have often thought that persons attending on mangy dogs have communicated the disease to horses."—Mr. Blaine declares, unhesitatingly, "that the mange of one (animal) can be communicated to the whole;" and adds, he has "witnessed several cases where the itch has been taken from mangy horses."—These English authorities are to a great degree supported by the opinions of continental veterinarians. The following account appears in the first volume of the *Recueil de Médecine Vétérinaire*:—

"In the month of January, 1820, a farmer purchased at Bergam market a mangy horse, and rode it to his own house, in the province of Milan. The very next morning he found he had himself got the itch in almost every part of his body, and that his son, and a friend who had accompanied him to the market, had likewise got it. The boy in the stable who groomed the mangy horse scratched himself greatly on the second day afterwards; a labourer did the same on the third day, who had had to do with the animal at work: in fine, upwards of thirty persons belonging to the farm caught the itch directly or indirectly in the course of a very short time, and some horses the mange."—In the Annual Report of the Veterinary School at Lyons, occurs an account of a mangy horse having communicated the disease to two cows placed beside him in the stable, and to several persons who had looked after him. In the same Report is mentioned the case of a pupil at the School



who caught the disease in his hands and arms from rubbing a mangy dog.—Hurtrel d'Arboval records an observation of the same kind. "An inhabitant in the vicinity of Montreuil-sur-Mer bought of a Prussian officer a pair of fine carriage-horses, both mangy. His servant, to whom he gave them in charge, caught the itch in his chin, from a habit he had of frequently stroking it with his hand; and what is remarkable, he contracted the disease nowhere else, not even in his hands."—Such cases as these, however, after all, are but rare; and, taking the other side of the question, there are those who disbelieve altogether in the communicability of mange from one species of animal to another:—Volpi, Monteggia, Leroy, and others.

CONTAGIOUSNESS.—That mange is a highly contagious disease—even "the most contagious to which the horse is liable"—appears undeniable, so far as horse and horse, dog and dog, and (in the case of itch) man and man, are concerned: but that an identity of nature is established between the diseases called mange and itch in the different species of animals, seems yet, at least in my mind, to admit of question. Were these disorders in all instances reciprocally communicable, surely we should have such cases as are related above, occurring much oftener than they appear to do. It is true the continental schools furnish a solitary case or two: but have we any such well authenticated in our own Veterinary College—even in our own country, were it not for Mr. Blaine's observations?—and these I cannot help feeling desirous he had given, on a point so questionable and important as this, in scrupulous circumstantial detail. The probability is that the matter of contagion is furnished by the fluid contained in the vesicles; since the disorder is not only communicable by actual bodily contact, but may be transferred through the medium of anything capable of conveying this fluid from the diseased animal to a sound one. Special care, therefore, must be taken that the mangy subject, should he be found standing in a stable with other horses, be immediately segregated into a place by himself; and likewise that no utensil of the stable or article of saddlery belonging to him be used about any other horse, at least without being thoroughly washed and cleansed first: for unless such things were old and worn out, there could be no good reason for destroying them. The curry-comb and brush, the clothes, the headstall of the halter, the

pannel of the saddle, and the harness-collar, in particular will demand attention.

**CAUSES.**—We have seen that mange is a disease contagious to a degree to render it easily transferrible from one horse to another: we have now to learn that, like most other contagious diseases, it may be generated in the animal's system, or else in his skin, without any reference whatever to contagion. Professor Coleman is of opinion that "mange is brought on from *poverty*; and that want of cleanliness of the skin may also contribute to its production, the same as the itch, which often exists in people who neglect to wash themselves." In reference to its spontaneous origin, Mr. Blaine observes, "among the *truly healthy*, as far as my experience goes, it never arises spontaneously; but it does readily find a spontaneous origin among the unhealthy." Hurtrel d'Arboval is inclined to attribute its self-origin solely to default of keeping the skin clean.

It is a notorious fact, that a gentleman's horse rarely or never contracts mange: it is the especial disease of the poor man's horse—of the horse that works hard and lives hard, and whose coat scarcely knows what it is to be either combed or brushed. In our cavalry, in the fine condition in which the horses are kept at home, mange is rarely seen; and yet, during the Peninsular Campaign, it was a common disease among them, though more especially among the bat-horses and mules. From all the observations I have been able to make, my own opinion is, that mange has a closer relationship with poverty of condition than uncleanness of skin: I do not think myself that horses, providing they were in good keeping and healthy, would be subject to mange, even though their skins were suffered to go uncleaned. At the same time, I would not deny that uncleanness might not prove an occasional adjunct in its production. How poverty of body operates in the generation of the disorder I do not pretend to know, farther than that it seems to be connected, either as a cause or consequence, with some derangement in the organs of digestion. Two years ago, I had a case of mange originating in a young mare standing in the stable, who was groomed and fed with the same attention as other horses, but who had never thriven since she was purchased: a circumstance evidently owing to disordered digestion, to which same source I attributed her skin disease.

**TREATMENT.**—Though I am induced to believe, myself, that mange, arising spontaneously, will very commonly be found to proceed either from poverty or constitutional derangement, yet,

when produced, it does not appear to be removable by constitutional means : internal remedies may aid in the cure, but external applications become absolutely necessary ; nay, will commonly prove sufficient of themselves. Sulphur being the sovereign remedy for itch, no wonder it should have met with a ready and general introduction as a cure for mange ; a character I believe, and indeed have found, it to be deserving of. When employed, I recommend one of the following formulæ :—

Take of Sulphur vivum.....	3vj
Linseed oil .....	℥bj
Common turpentine .....	3ij
Mix well together.	

Take of Sulphur vivum.....	3iv
Powdered hellebore root .....	3ij
Corrosive sublimate, in fine powder .....	3j
Linseed oil .....	℥bj.—Mix.

Mercurial preparations will cure the itch ; but they are not so certain in their operation as sulphur. This remark will apply to mange : hence, the introduction of mercury—commonly in the form of corrosive sublimate—into many of our recipes for mange. Even sulphuric acid and water, in the proportion of 3ss to a quart, will, in many incipient cases, arrest, and I believe in some even cure, the disorder. Turpentine, from its known highly stimulating properties when applied to the skin, enters also into many of our applications for mange ; though, in my opinion, it is inferior either to mercury or sulphur. Tobacco-water (made by steeping an ounce of common tobacco in a pint of boiling water) will also prove curative in the generality of ordinary cases. My favourite remedy, however—that which I have seen succeed after the tiresome repetition and failure of others—is, Barbadoes tar and linseed oil.

Let a pint of tar be mixed with three pints of linseed oil in an iron kettle ; and let the mixture be simmered over the fire for a few minutes until both be intimately incorporated. Those who may seek a cleaner or neater formula than this, may use the oil of tar and linseed oil or hogs' lard, in the same proportions : the lard will form an ointment of a very useful kind to be kept in the veterinarian's pharmacy, under the head of *skin ointment* :

a preferable appellation, in my opinion, to *mange ointment*. The oil of tar by itself proves a blister when rubbed upon the skin. But, independently of its highly stimulant properties, tar appears to have some peculiar effect on the skin; since it not only suppresses and cures the disease in less time than any other remedy I am acquainted with, but in the end proves so congenial to the texture, as to render it supple and soft to the feel, and dispose it for a covering of hair, whose growth I have often thought it appeared to have considerable influence in promoting. When required for use, a sufficient quantity of either liniment or ointment is to be heated in an iron ladle, and, at a temperature comfortably warm to the animal's skin, to be thoroughly scrubbed into the mangy places with a soft brush. A warm sunny situation is to be preferred for the inungation. In about a week afterwards, let the animal's skin be well washed with soft soap and warm water; after which it may be examined. Though a second dressing does not, in all cases, seem requisite, it is the common practice to administer one: "it can do no harm," and may prove preventive of a relapse. Should the case be inveterate, one of the sort called red mange, it becomes advisable to stir a drachm of finely powdered corrosive sublimate into a pint of the melted ointment or liniment, by way of augmenting its activity; and now a third and even a fourth dressing may become necessary. By this mode of proceeding I have seen hundreds of horses radically cured of the loathsome disorder.

CONSTITUTIONAL TREATMENT.—Supposing the disease to break out among horses low in condition and poorly fed, I recommend that their diet be ordered on a more liberal scale, and at the same time be modified to as great an extent as possible. Should such horses be found in a cold situation, I advise that they be removed to a warm one. In the case of a horse already well fed and housed, and wherein the digestive organs appear to be faulty in their operation, we ought to have recourse to mild purgative and alterative medicines; and at the same time bruise or scald the animal's corn, or give carrots or turnips, &c. by way of change of diet. In the summer season, the best situation for such an unthrifty subject is the grass-field; wherein he may be turned, providing he be well dressed first, at once among other horses, without any apprehension being entertained of giving them the disorder.

## HIDEBOUND.

Take a horse fat and sleek in condition out of a warm stable, where he has been well clothed and fed, turn him during the cold and wet of winter into a strawyard, and go and look at him three months afterwards, and you will hardly recognize your own horse. You will find him with a long, shaggy, staring coat; a belly double the size it was when in condition; and a skin sticking close and fast to his ribs, which may now be readily counted with the hand, if not with the eye: in a word, the change has brought forth what is called *hidebound*. In no case is hidebound of itself a disease; but in this instance it is not even the symptom or indication of disorder: the animal continues in perfect health, but in consequence of having passed from good keep to bad, from comfortable and genial warmth to cold and wet, he has lost his condition—lost all the fat he had upon his ribs, leaving hardly any thing intervening between them and the skin, the natural result whereof is hidebound. The poor man's horse picking his hard fare off the road-sides and hedge-rows; and the ass, whose fare and treatment are harder still, furnish additional and equally familiar illustrations of this part of my subject.

Hidebound, however, may occur as the indication or result of disease. How often do we see among a lot of young horses one that "looks ill" compared with the others! His coat is rough and rusty and arid; his skin sets tight upon his ribs; he is tucked up in his flanks; his dung consists of chips of hay and oat-husks very imperfectly or hardly at all converted; in fact, this horse is the subject of indigestion, and hidebound appears as one of its prominent symptoms.

But hidebound may arise as the sequel or effect of disease. A horse shall have inflammation of the lungs, which shall run into the chronic stage, and in that form hang long and wearisomely about him. Under such influence, the animal will gradually decline, lose his condition, daily get thinner: while his skin, from the absorption of the subcutaneous adipose matter, may be

daily felt setting closer and tighter upon his ribs. In fine, this horse also will become the subject of hidebound.

From the foregoing observations we may collect, that hidebound is not only no disease of itself, but may exist without disease being present; also, that it may prove symptomatic of disorder, or arise as a consequence. After this explanation, though I have ranked hidebound among the *diseases* of the skin, I trust that no misconception can happen in regard to its veritable nature: or, in other words, that none of us will be found falling into this one of the "besetting sins" of farriers, who have not only doctored the skin to relieve hidebound, but have even suffered their ignorance to carry them so far as to make use of pincers and other mechanical means by way of "loosening the hide."

#### LOUSINESS.

It not very infrequently happens that we take up a horse in the spring of the year, who has been turned out for the winter, "lousy" as well as long and rough in his coat, and poor in condition and hidebound: for half-starved poverty-struck subjects, such as horses that live on commons or by the road-side, or that are rendered so by poor keep and cold and wet, at grass or in straw-yard, are much more liable to become lousy than such as are well kept and comfortably stabled. The cleansing of the skin may have something to do with this; but I feel disposed myself to ascribe more to poverty: though I do not pretend to give a reason why these insects should infest such subjects in preference. All our domesticated animals appear to be liable to these visitants, though each kind seems to possess a species of louse peculiar to itself: which is likewise the case both with fleas and worms. The exhibitors of fleas, who have recently cut such ridiculous figures before the publics of Paris and London, have at least taught us these facts—that no flea possesses the bodily strength and the faculty of fasting so long as that which inhabits our own bodies. In like manner human lice are peculiar; they are of two kinds: one breeds in the hair of the head; the other

is pudendal. Those found in the coat of the horse are also of two descriptions, according to Hurtrel d'Arboval; both of which differ from such as are seen upon neat cattle and sheep. When they become numerous, they are apt to occasion itching of the skin, and cause the animal to rub himself against any thing within his reach, or to be continually biting his sides and quarters. Now and then they collect in particular places, and so disturb or disorder the roots of the hair, as to cause patches of the coat to fall off.

**TREATMENT.**—Our first object is to destroy the lice: after which, their recurrence will be best prevented by improving the condition of the animal, and paying attention to the combing and brushing of his coat. A variety of lotions, ointments, liniments, powders, &c. have been used for the purpose of killing these insects: for my own part, however, I have but two to offer, of the efficacy of either of which I have had no reason to complain: one is tobacco-water; the other, a watery solution of corrosive sublimate. In some inveterate cases the two lotions may be advantageously combined, or the drachm of sublimate may be dissolved in a pint of the tobacco infusion.

Take of common shag tobacco.....	3j
Pour upon it a pint of boiling water, cover it up, and let it stand until cold.	
Take of Corrosive sublimate.....	3j
Boiling water.....	℞j
Let it stand until cold.	

Some use mercurial ointment for the purpose, and a very effectual dressing I believe it to be: it is, however, more troublesome to apply than a lotion, less penetrative among the hair, and requires a thorough subsequent ablution; which, though perhaps recommendable, is not absolutely necessary after the employment of the lotions.

## WARTS.

Everybody familiar with horses is perfectly well acquainted with the appearance of the tumour or excrescence upon the skin

to which we give the name of *wart* : nor need he be told that it is a production to which horses in general are liable, and some in particular extremely subject. Indeed, such an annoyance are warts to some horses, that hardly any parts of their bodies are free from them. There is no such thing as putting them into harness, or even saddling or bridling them, for warts. Though no part of the skin can be said to be exempt, the most common situations for warts to grow, are the head—particularly upon the eyelids, and about the muzzle and ears—the belly, the sheath, the penis, and the inner sides of the thighs and arms : in fact, they appear to select those places where the skin is thin, and the hair comparatively scanty. Warts vary in

MAGNITUDE, ASPECT, AND STRUCTURE.—Sometimes we meet—especially upon the sheath—with crops of them about the size of peas : in other cases, a single wart has been known to grow to such a volume as to impede even the action of the limbs. In general, warts are enveloped in cuticle, which is thin, smooth, and hairless ; though, in time, it often becomes thick and callous, and assumes quite a horny texture. In other cases, we meet with their surfaces raw and ulcerous, and even fungous, bleeding on the least irritation, and shewing no disposition whatever towards cicatrization. When cut into, they in general exhibit a firm, white, uniform, fibro-cartilaginous texture, and seldom bleed any from their interior, though hæmorrhage is often very considerable from their roots. Warts are said to be productions from the substance of the *cutis* or true skin, whence they derive their cuticular coverings ; some growing by long slender necks or pedicles, others possessing broad roots for their bases : though there are warts which are *encysted*—encased in skin, out of which, when liberated by incision, they slip with the same cleanness and facility that a nut does out of its husk : these appear to me to have a deeper origin.

TREATMENT.—Ligature, extirpation, and cauterization are the means usually employed for the removal of warts ; and it depends on the nature of the case to which of them we should have recourse. Where the wart is contracted about its base, or grows from a slender root, *ligature* is the preferable mode of proceeding.



With a piece of strong silk or coarse thread, doubled and well waxed, encircle the root of the wart, and draw it as tight as possible, without cutting into the substance of the part; the object being *compression*, obstructed circulation, and consequent destruction of the vitality of the excrescence. Should the thread, in being drawn tight, happen, however, to cut off the wart, we may apply a red hot budding-iron to the root, and thus dismiss the case. Encysted warts require nothing more than incisions diagonally across their surface to liberate them: they will then slip out of their cellular envelops of themselves, and the places will heal up without our assistance. When warts, however, are consubstantial with the skin, have broad bases, and surfaces at all raw or ulcerous, the most effectual mode of procedure is by caustic. We have nothing more to do than to moisten our fore-finger, and dip it in powdered white arsenic, and attach a thin layer of the powder to the surface of the wart; which, should it not be raw already, may be scratched with the finger nail until it becomes so. In the course of a week, discolouration and coldness will be perceived in the wart, and in another week or two it will fall off; a dead corrupt mass of animal matter. The great advantage of employing arsenic is, that, once effectually destroyed by it, no wart ever grows again in the same place. Mr. Henderson, V.S., Park Lane, London, tells me that the bone of the cuttle-fish, scraped to a powder and made into a paste with sulphuric acid, will answer the same purpose. The French use lunar caustic, or else the sulphuret of arsenic. There are some parts of the body, however, where the employment of these caustics might be dangerous, or (from being rubbed off) prove ineffectual, such as the edges of the eyelids, the penis, &c.: in these cases we may commonly employ the knife, taking care to have the cautery at hand to stanch hæmorrhage, as well as destroy any warty roots remaining after amputation.

#### GREASE.

The skin of animals, besides the important purposes it serves of being a universal covering to their bodies, and a nidus for the

production of hair, performs the part of an *organ of secretion*: its surface everywhere emits an exhalation, which, though at ordinary times insensible to us, is nevertheless constantly going on, and even in common life attracts notice the moment it issues in inordinate quantity, and appears in the form of *perspiration*. In addition to this, there are parts of every animal wherein the skin produces secretions or exhalations peculiar to those parts, and for specific purposes: the skin lining the ear generates a waxy matter for moistening and lubricating the auditory passages; the eyelids secrete tears, which render the eye clear and bright; the armpit of man furnishes a peculiar oleaginous matter for softening the skin and guarding against friction: the skin of the heel of the horse produces a peculiar greasy matter, for the purpose of keeping the part (subject to such continual action as it is) soft and supple and extensible. And it is the inordinate secretion of this peculiar greasy matter, a little modified perhaps, that constitutes the disorder denominated, from that very circumstance, the *grease*. This is the view of the disease Professor Coleman was wont to take in his Lectures; and it is one which my own subsequent observation and reasoning has only served in my mind to confirm. At the same time, it is right we should know that French veterinarians entertain different notions on the subject. Hurtrel D'Arboval regards the bulbs or roots of the hair as the seat of grease: were that true, however, I see no reason why we should not have the disease appearing in other parts of the skin; which we know never to be the case.

THE SYMPTOMS OF GREASE resolve themselves into those of its *simple form*, its *ulcerative form*, and its *grapy form*.

When a horse is attacked in the stable, the first indication observable is filling or swelling of the hind legs: which being suffered to go unrelieved, in the course of a short time works its own discharge in the form of drops of oily fluid clinging to the hairs in the hollow of the heel; the hairs themselves at the same time appearing erect, after the manner of bristles. The skin of the heel—perceptible in a *white heel*—exhibits a blush upon its surface; and feels hot and greasy, and has a peculiar loathsome odour. Should any attempt be made to take the foot

up, the animal convulsively catches it off the ground, or at least manifests considerable reluctance to have it handled. The horse may go stiff on first leaving his stable ; but seldom at this early stage does much lameness exist. From this time, however, the inflammation, and issue, and swelling continuing to increase, the horse becomes so painfully sore and lame, that, for fear of flexing his heels, he straddles with his hind legs as though he could hardly walk out of his habitation, which he does in the most awkward and unwilling manner possible ; while his heels and parts adjacent have become so exquisitely sensitive, that it is now really quite dangerous even to touch them, lest, by the sudden and sidelong manner in which he catches up the limb, an untoward blow might be the consequence. Notwithstanding, however, that at this moment it causes him such pain to move, continued exercise has the effect of relieving him ; for after walking for a short time, he will step out more boldly, and at length hardly limp at all.

The next form the disease assumes is the *ulcerative*. Either from the irritation of the morbid issue, or from the flexion and extension it undergoes in the motion of the limb, the skin splits, as it were, transversely—*cracks*, according to our professional phraseology—in which cracks, exulcerations, more or less deep and extensive, quickly develop themselves. At the same time, the greasy discharge, which has been all along growing daily thicker and more offensive, becomes converted into one of a purulent nature. In this form the disease will extend, laterally, around the sides of the pastern ; and upwards, over the back of the fetlock, even half way up the back of the leg : the tumefaction all the while keeping pace with the ulceration.

The third and inveterate form of grease is the *grappy*. The skin, inflamed and tumefied and cracked, and in places exulcerated, and still subjected to the irritation and aggravation of discharges of the most loathsome and malignant nature, now begins itself to undergo a change of structure, and to generate products of a morbid and novel kind. Along with the thickening and induration which the skin at this time undergoes, it throws off in its excess of action, from the ulcerated or denuded

parts of its surface, by a sort of process of granulation, exuberances of adhesive or albuminous matter, which, from their globular form, and their appearance in clusters, have had the appellation of *grapes* given to them. As St. Bel happily enough depicts this change, the parts look like "the outward coat of a pine-apple;" or, were it not for colour, like a full-blown cauliflower: for I have seen grapes as large as segments of marbles. These morbid productions grow from the heel, rarely from the pastern or coronet; and spread up the back part of the leg, but never reach the hock. By degrees they grow vascular, then turn intensely red, and become sensitive to the highest point; so that pressing or even touching them causes great pain. In time, however, they undergo another—a chronic change: they lose their exquisite feeling and much of their vascularity, and become indurated, insensible, cartilaginous, and even horny; which would appear to be their final conversion. At this period, the substance of the skin is experiencing similar transmutation: I have found it thrice its natural thickness, and altogether more like cartilage than its original texture; I have never, however, found it horny. Other changes accompany these. The hair gradually falls off, leaving the grapes either destitute of any at all, or but very thinly beset with them, and those few in a state of erection, like bristles upon a hog's back. From such parts of the skin as remain unoccupied by grapes, and from the crevices between them, is still issuing a greasy, rancid, purulent, and most foetid discharge, here and there mingled with blood. By this time, also, the leg has acquired an enormous bulk, from which circumstance alone, independently of its sore and painful condition, the action of the whole limb is greatly impeded. In fine, to make use of the translated expression of St. Bel, the parts altogether present "a cumbersome mass of disease;" which, it is hardly needful to add—though it is possible we may succeed in rendering the animal's limb in a measure serviceable—it is not in the power of art to restore to a healthy condition.

THE PARTS SUBJECT TO GREASE, as we have seen, are the *heels*, and especially the heels of the *hind* legs: the disorder

very rarely making its appearance in the fore limbs. The pathology of which appears to be this:—the heels, the hind ones in particular, being parts far removed from the source of circulation,—the heart, and the circulation being on that account comparatively weak in them, their capillaries become the more liable to congestion, a condition from which they have no so ready way of relieving themselves as that of emitting their redundancy of blood in the form of secretion.

THE HORSES ESPECIALLY SUBJECT TO GREASE are those that possess the least breeding; those of coarse and lax fibre, and whose legs are of the kind called *fleshy*: coach-horses, cart-horses, and in particular such as are of large size, and have white legs, are the most disposed. Some seem to be constitutionally prone to the disorder; for there are horses of the above description whose legs will in the stable, at certain seasons of the year, fill and swell, in spite of all the physic and exercise, and even bloodletting, we may administer. We seldom meet with the disease in gentlemen's hackneys and hunters, and rarely indeed in racers: a circumstance in a great measure owing, independently of their superior breeding, to the grooming and care these animals experience.

AGE AND SEASON.—It is at the ages of three and four, when they first come to be stabled, that horses are the most liable to take this disorder; and in particular during the autumnal and winter seasons, when cold and wet, or snow prevails; though an inclement spring may equally favour its production. At these times, grease is very apt to break out among a lot of dealer's horses, just arrived from the country; and when encampments were in vogue, it used to be prevalent among the cavalry on their return from camp into quarters.

CAUSES.—The *proximate* one is inflammation; or, in the incipient stage, a condition bordering on that, which we call congestion. Cold, and wet—the producer of cold—*predispose* the parts to inflammatory action, and heat directly *excites* it. A horse returning to his stable with his legs dirty and wet, and being allowed to stand long in that condition; or the groom washing them, even though it be with warm water, and suffering

them afterwards to grow dry of themselves ; is a very common way for grease to be produced. I have heard Professor Coleman say, that the groom deserved reprimand whose horse became greasy ; and so far as this local cause is concerned, I perfectly agree with him. But, in regard to horses that come for the first time in their lives to be stabled, or that come from grass or strawyard into stables, grease is one of the consequences of the plethoric condition of their systems naturally attendant on such a change of situation, living, &c. ; and in this case it is not in the power of grooming to prevent the disease without the concurrent aid of regimen and medicine, and perhaps bloodletting. Here, grease has a constitutional origin ; by constitutional means is to be prevented ; and not without constitutional remedies to be cured. There are some horses, as I said before, so rank about their legs, that they not only require every help the groom can afford them, but constant auxiliaries also from the pharmacy ; though even such gross subjects as these, when once got into working condition, may by good stable-management be kept tolerably free from "filling and flying" in their legs. But, to recur to the cause I first stated, grease may have a purely local origin : it may arise from cold and wet ; it may follow the application of a simple blister to the leg ; it may, according to a notion of the late Professor Peall's, originate even in the ammoniacal, stimulating exhalations of the stable.

CONTAGIOUSNESS.—St. Bel, who wrote "An Essay on Grease," for which he was presented with a prize by the Royal Society of Medicine in France, thus commences his paper :—"The grease is *in general* a cutaneous chronic affection, *sometimes* inflammatory, *sometimes* *infectious* ; and I have known it *contagious*." We are told by some Jennerians, that cow-pock had its origin in the transfer of the matter of grease to the teat of the cow ; indeed, that the former disease may be directly communicated to a human being by inoculating with matter taken from the horse's heel. Some have gone a step further than this, and asserted that glanders and farcy are producible in the same manner. These novel doctrines, however, seem to have made but little way, for we hear nothing of them

nowadays : not a very bad criterion of their insubstantiality and groundlessness. I have heard Professor Coleman affirm, that there never was a well-authenticated instance of cow-pock being generated from grease ; and I utterly disbelieve myself all stories of its infectiousness or contagiousness among horses. In certain seasons and situations the disease may undoubtedly be said to be *sporadic* : but then the causes will be found to be too manifestly uniform, and the circumstances similar, to attribute its prevalence to infection or contagion.

THE TREATMENT of grease may be a very simple affair, or one of more or less complication, depending on its duration, stage, and degree of virulence.

In lecturing on this part of our subject, Professor Coleman lays great stress on a favourite theory he has framed, grounded on the principle, that, since wet or moisture is the ordinary cause of grease, it cannot, without harm, be employed in any form in the treatment of the malady : though, in my mind, this "principle" seems to admit of qualifications of such a nature as will tend almost or quite to subvert it. In the first place, we certainly are not warranted in laying it down as an axiom in medicine, that what by predisposition gives rise to a disease, is not, under some modified form, to be employed by way of remedy : else, how comes it that ice and snow-water prove remedial for chilblains ?—cold affusion for fever, pneumonia, &c. ?—for, be it remembered that moisture is not the exciting but the *predisposing* cause of grease : the disease would not follow its application at all, unless the heels had re-action excited in them from other causes. And, in the next place, even this wet or moisture, under circumstances the most favourable to the production of the disorder, viz., in a hot stable—would not, in all probability, be attended with any such ill consequences, were the circulation in the heels maintained by friction and bandages, instead of being allowed to grow debile and tardy by evaporation, from the parts being suffered to get dry of themselves.

In a case of simple greasy issue, in which the skin of the heels manifests any acute inflammation, I do not hesitate to affirm that a bran poultice is the best of all applications ; and this ought to be renewed, morning and evening, the heels being every time previously prepared for its application by being sponged perfectly clean with warm water, and by trimming with sharp scissors—or, what is better, shears—to the extent they may require. At the same time, the

horses should be put on bran diet; have a brisk purge administered to him; and be walked out twice in the course of the day. After the operation of the physic, and the inflammation in the heel has manifestly begun to decline—which by this time commonly happens to be the case—we may commence with astringents; first employing them in a mild form, afterwards augmenting their strength. The astringent substances commonly used by us, are Armenian bole, charcoal, calamine, bark, sugar of lead, alum, white vitriol, blue vitriol, mercury, &c. Most of these may be employed in one of three forms:—that of powder, aqueous solution, or ointment. Alum is the one I in common use myself, and I combine it with either bole or charcoal, accordingly as I want it for a red or a black heel; the colour of the powder on some occasions being an affair of consequence.

For a bay or chesnut heel:—

Take of Powdered alum .....	3j.
Bole Armenian .....	3j.
Levigate to an impalpable powder.	

For a black heel:—

Take of Powdered alum .....	3j.
Powdered charcoal .....	3j.
Levigate the same.	

For a white heel, calamine powder alone may be used: or its astringent strength may be augmented by the addition of alum; beginning with the proportions of 1 to 8. Those who prefer an aqueous solution, may employ sugar of lead, or alum, or zinc, in the proportion of a drachm of powder to an ounce of water. The ointment I recommend for common use is either of the following:—

Take of Alum finely powdered.....	3j.
Hogs' lard.....	3j.
Sulphuric acid.....	gutt. x.
Melt the lard, and stir in the other ingredients.	

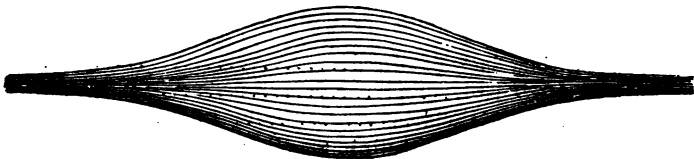
Take of Citrine ointment .....	1 part
Hogs' lard.....	2 parts.
Melt together.	



The decline of the inflammation rendering the continuance of the poultice unnecessary, I commence sprinkling the heels with astringent powder, using it once or twice a-day, accordingly as it may require renewing, and taking special care all the while that the animal gets his walking exercise regularly twice a-day. It is also proper, now that the physis is worked off, that a diuretic ball should be given daily, or every other day, according as there appears much or little disposition in the legs to tumefy. But as soon as I find the greasy issue arrested, and the skin becoming dry and hard, I substitute an astringent ointment for the powder; which I conceive corrects any disposition there may be in the heel to crack, by furnishing the skin with a sort of artificial lubrication.

In cases where the local inflammation shews a tendency to violence, and it is combined with much tumefaction of the legs, abstract four or five quarts of blood, and give stronger physis; and pursue for a longer period the poulticing: after which, prosecute the astringent treatment, increasing the strength of your application as you proceed.

In cases become chronic from their duration, and when all acute inflammation has passed away and left a profuse greasy and purulent issue, which in its effluxion is rotting the horn of the foot, and by its offensive fœtor polluting even the very atmosphere of the stable, I have known the speediest cures performed as follows:—The heels to be trimmed as closely as possible, and afterwards thoroughly cleansed with warm water and sponge, and then rubbed dry. A pledget of tow, with two long ends, of this shape,



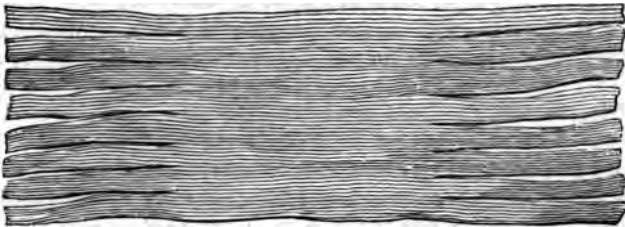
to be prepared; upon the broad or middle part of which with

a spatula is to be spread rather thickly one of the following liniments :—

Take of Powdered blue vitriol . . . . . 3j  
 Powdered alum . . . . . 3ss  
 Bole armenian . . . . . 3j  
 Levigate to a fine powder, and add  
 Of linseed oil . . . . . 3iij  
 And mix into a liniment.

Take of Powdered blue vitriol . . . . . 3ij  
 Powdered calamine . . . . . 3j  
 Levigate to a fine powder, and add  
 Of linseed oil . . . . . 3iv  
 And mix into a liniment.

Apply the pledget in such manner that the liniment lies in close contact with the diseased surfaces, and maintain it there by tying its ends tight around the front of the pastern. Should one pledget not be sufficient for this purpose, apply a second, and even a third. As a farther security to the dressings, it is advisable to envelop the whole in an eight-tailed bandage,



of a size suitable to the dimensions of the pastern and fetlock ; the tails being tied in front, and two of them encircling the leg above the fetlock, in order that no displacement may happen through the flexure of the joint.

This done, give the horse a strong purge, and let every thing remain quiet until the operation of the physic has subsided. By the third or fourth day, the legs will have become greatly tumefied ; the physic being then set or setting. This is the time for the removal of the dressings. We shall find the heels wonderfully improved ; so much so, perhaps, as to require nothing

further than daily sprinklings with astringent powder. And as for the swelling of the legs, that will speedily disappear on exercise, which should now be prolonged to two or three hours at a time. A diuretic ball given daily will aid in its dispersion. Should a renewal of the same dressing—the liniment—be deemed requisite, we must take care to have the tumefaction removed from the legs before they be bound up afresh.

Chronic, malignant, grapy grease—a disease that formerly made such ravages in the ordnance and cavalry services as to be the occasion of many horses being, year after year, sacrificed as incurable—is nowadays but rarely met with; at least in any establishment, private or public, where veterinary aid is ever sought; for it is only the grossest neglect or mismanagement that could possibly lead to its production. By way of a sort of record of what used to happen, I will relate a case of this description; and one that will serve—since the treatment adopted proved completely successful—at the same time to shew in what the method of cure should consist.

On the 19th June, 1821, was placed under my father's care for treatment, a chesnut mare, seven years old, and rather low in condition, who had suffered from malignant grease for upwards of two years. The disease originated in the ordinary way, and has arrived at its present height and malignancy from neglect, continued exertion of the parts, and occasional maltreatment. All four heels, but particularly the hind, are studded with prominent grapes, thinly clad with bristled hairs, through which their bare surfaces appear intensely reddened, and here and there issuing blood. In places where there are no grapes the skin exhibits a red, rough, elephantiasical aspect. The grapes extend for several inches above the fetlock; but they are all situated at the posterior parts of the legs. The hollows of the heels are entirely covered with ulcerated grapes. A greasy and extremely offensive matter issues from every part of the morbid surface, which lodges in the crevices between the grapes, as if so much oil had been poured thereon. On the same afternoon on which she was admitted, my father submitted her to the following painful operation:—Having properly secured her, standing, with a sharp scalpel he commenced paring off the grapes from the hind heels upon a level with the surface of the skin. In doing this he found it necessary to have heated irons near him to stanch the hemorrhage as he proceeded; which, owing to the high vascularity of these excrescences, was very considerable: though the cautery was prepared for another object—that of

destroying the morbid surface from which the grapes had so long been growing. All the larger grapes having been in this manner removed (and they proved to be cartilaginous, some even horny, in their composition), the remainder of the diseased surface was lightly seared over, and the mare was returned to the stable, and dressed with the following liniment, spread upon pledgets of tow, and confined by many-tailed bandages:—

Take of Powdered blue vitriol..... ʒj  
 Powdered alum..... ʒiv  
 Linseed oil ..... lbij.—Mix.  
 A brisk purge was given after the operation.

24th.—The diseased parts were covered over with sloughs; which being wiped off, the surface presented a raw and highly vascular appearance, and now disclosed many smaller grapes that had been left unpared. The mare was cast, the fore legs were operated upon in the same manner as the hind ones had been, and the hind legs were also rid, by the knife and cautery, of many grapes, which before were concealed by larger and more prominent excrescences. The parts were afterwards dressed as on the first occasion; and some of the *unguent. ferri acetatis* was applied to her frogs, in which thrushes had made their appearance since last dressing.

27th.—Since the 24th some little fever has been hanging about her; her appetite has been impaired, she is tucked up, and has evidently suffered from pain. She was walked out, and afterwards dressed as before.

30th.—A raw surface pretty free from grapy excrescences now presents itself. Her legs were simply smeared over, without any pledgets or bandages, with the ointment, and (the weather being warm) she was afterwards turned into a grass paddock.

July 4th.—An ichorous discharge, but which is not very offensive, issues from the ulcerated surfaces. Ointment repeated.

9th.—The surface looking florid and healthy. What grapes still remained unpruned were to-day touched, by means of a feather, with nitric acid. They instantly turned yellow, and a process of solution began in them. The surface generally was washed with blue solution ʒj to ʒj.

11th.—Sloughs caused by the acid, separating, and leaving deep excavations. Blue solution repeated.

15th.—The heels have begun to granulate, and in places are shewing signs of cicatrization. Alum ointment.

30th.—Since the 15th the dressings have been mild, and such as are promotive of the granulating process. The heels are making great progress towards health.

After this, nothing worth mentioning was done. Not merely a new surface, but in most places a new skin, was eventually formed, and the mare was ultimately restored to her master perfectly sound, with only some trifling induration of the parts which had so long been the seat of such noisome disease.

## CHAPPED OR CRACKED HEELS.

It very often happens in the winter season, or during the continuance of wet and cold weather, that chaps or *cracks*, as they are called, are discovered in the heels of the hind legs of horses—rarely in the fore ones—and that they have made their appearance without any previous or accompanying grease: of which disease, be it remembered, under other circumstances, they constitute a part. They consist in extended linear ulcerations, running in a transverse direction, and in their incipient or formative state strike us with a notion that the skin has really *cracked* in those places: a notion not altogether without foundation, since it would appear that they often owe their origin, in a measure, to extension of the skin at a time when its oily suppling secretion is either defective or altogether suppressed. The same thing is still more likely to happen when the legs are already in the condition called *filled*, and are naturally of that coarse description so well known under the epithet of *fleshy*. This seems to be the history of the case in stabled horses:—the legs become filled, congested, inflamed perhaps; the secretion disordered or suppressed; the skin stretched, cracked and ulcerated. But in regard to horses that are turned out during the winter season, and whose legs become incessantly exposed to cold and moisture, ulceration seems to arise in their heels from loss or diminution of vital energy—from want of power in the animal's constitution to maintain heat and animation in a part constantly under the influence of cold and wet, and so remote from the source of circulation as the heel of the hind extremity. The skin loses its vitality, sloughs and ulcerates. Horses whose heels are naturally clothed with long hair, and which have long gone unshorn, become, from having their legs trimmed, more susceptible of such influences, and in course more liable to grease and cracked heels: though there is an evil in the untrimmed condition, from their being likely to retain the wet and harbour dirt, and fall into disorder in that manner.

THE TREATMENT of these ulcerations must be regulated by

their origin, duration, and condition at the time. Horses that have contracted them in wet should be removed into dry situations. Those that have generated them in the stable will commonly be benefitted by purging, sometimes even by bleeding, by way of *cooling* and *fining* their swollen and inflamed legs. Should the ulceration not yet have penetrated through the substance of the skin, little else will be required to heal the sore than the constant application of bran poultices: dressings of a mild and simple kind, such as common astringent powder, weak solutions of white or blue vitriol or alum, tincture of myrrh, or benzoin, &c. will aid the healing process; but the principal thing to be attended to—at least, so all my experience tells me—is the *poulticing*. An excellent dressing for sores weakly or sluggish in their granulative operations, is a sprinkling of finely pulverized red precipitate. Where an ulceration, however, has made its way through the skin, it is likely to become rather a troublesome, and probably an intractable affair. The borders of the surrounding skin appear red and prominent, and, perhaps, everted; while its bottom is dingy and sloughy, and exuding an ichorous discharge. This carbuncular sort of sore will require a thorough sloughing out: for which purpose some practitioners make use of lunar caustic, others of the actual cautery; though, for my own part, I prefer the butter of antimony; or, should that not succeed, the nitric acid; the object being to destroy the sloughy cellular substance, and produce an entire new bottom to the ulcer. The caustic dressing had better be applied with a little tow-mop: previously to its application, the surface of the sore should be wiped dry with soft tow; but not harshly wiped, lest it bleed. After being dressed, let the heel be enveloped in a bran poultice; and this should not only be persisted in until the separation of the slough, but until such time as the ulcer is nearly healed: the granulations, as soon as they make their appearance, being either stimulated or mildly repressed by one or other of the dressings aforementioned, or even by the application of dry tow alone, which will often be found to answer the latter purpose better than any medicament. The French commonly cauterize sores of this description: using the budding-iron lightly

or heavily, and at a low or a high temperature, according to the effect desired to be produced. Hurtrel d'Arboval's mode of slight cauterization, is to besprinkle the surface of the sore with gunpowder, and set light to it. What tends very much to retard the healing of these sores, is the motion—the alternate flexion and extension—of the pastern and fetlock ; and as exercise is, otherwise, very beneficial in these cases—indeed, the legs would not endure a state of absolute rest—it seems difficult to steer between these evils. What will very much tend to diminish the effects of the latter one—the extension—is the wearing of a very high-heeled shoe ; and this I recommend, providing due attention be paid, while it remains on, to the condition of the frog elevated by it.

## Section VI.

### DISEASES OF THE CELLULAR MEMBRANE.

EXTERNAL DROPSY	{	SWELLED LEGS		ABSCCESS	{	PURULENT
		WATER FARCY				
		SWELLED BELLY				
		— SHEATH				
		— BREAST				
		PUNCTURED BELLY				SEROUS.

### DROPSY.

THE cells of the cellular membrane, and those cavities of the body denominated serous, have naturally exhaled into them an aqueous vapour or secretion, which has no sooner bedewed their internal surfaces, and moistened them by condensation, than it becomes removed by the absorbents. The supply, however, being incessant, either vapour or fluid is always present in these interstices and cavities; though not to any amount unless under circumstances of disease. It is obvious that fluid may collect either from augmented exhalation or diminished absorption; but so various are the causes and influences that may occasion these changes, that it is not only difficult to determine, in some cases, to which of them the collection of fluid is owing, but still harder to discover whether any and what other cause is operating. We learn from the best medical authorities of the day, that dropsies may arise from general or local plethora; from obstructed circulation; from deficient secretion; from a thin or watery condition of blood.

**DIVISION.**—Dropsies are either *external* or *internal*, *acute* or *chronic* in their nature. An external dropsy consists in an effusion of watery fluid into the cells or interstices of the cellular mem-



*brane*—the loose reticulated tissue underneath the skin, which is bound by it to the flesh. An internal dropsy is a collection of similar fluid within any one of the internal cavities of the body; the chest, belly, head, &c. Our present concern is with

#### EXTERNAL DROPSIES.

These, in a general way, are comprehended under the technical appellations of *anasarca* and *œdema*: terms which, though often indiscriminately applied, seem more correctly to be used with this difference—that the former means a sort of *general* dropsy, while the latter denotes effusion in some *particular* place or part. The most common form of external dropsy in horses, is

#### SWELLED LEGS.

When a string of young horses first arrive from the country, and are put into London stables, among the various disorders likely to assail them—depending on the season of the year, their ages, subsequent management, &c.—the most common or general will be found to be swelled legs. The changes these animals have been suddenly subjected to, are such as to create *plethora*\* in their systems, of which dropsy may be regarded as one of Nature's modes of relief. The disorder, in this instance, is clearly of an inflammatory nature: it proceeds from the same causes as in other cases produce inflamed eyes, colds and coughs, inflamed lungs, &c.; and, as we shall find hereafter, is in no way so directly removable as by the use of the fleam. At the same time it is not to be denied that the action of the absorbent vessels may be diminished, in consequence of the comparatively quiescent state in which the animal is placed; and from the same cause will the secretions—and, in particular, those from the bowels—suffer more or less decrease. The legs are the common seat of the dropsy thus produced, for two reasons:—1st, being the lowest or most dependent parts of the body, whatever fluid collects in the interstices of the cellular membrane will naturally

\* Refer back to *Plethora*, page 11.

gravitate into them ; and, 2dly, being parts the farthest removed of any from the heart, the forcing power of that organ is comparatively weak in them ; and, consequently, when congestion has taken place, it requires a greater effort to propel the blood into the veins, back, against gravity, to the heart, than to discharge it from its present situation in the form of aqueous effusion. The same reasoning will account for the greater disposition there is in the *hind* legs to fill than in the fore.

TURN THE HORSE OUT of his warm and comfortable stable, give him his liberty, and expose him to the open air, and in the course of a short time, all swelling will leave his legs—all indication of humour disappear. The cold air has operated as a sedative on his system, and as a bracer on his legs: it has allayed febrile irritation, and thereby arrested the augmented exhalation ; at the same time, in diminishing the action, it has increased the power of the heart, as well as that of the capillaries of the legs, and so removed all further disposition to congestion. In addition to this, the exercise the animal now takes has a tendency to augment the secretions and excretions ; and thus, in an indirect manner—if not of itself, directly—to incite the absorbents to greater action. Change of diet will also have its influence in this translation, especially should it be from the stable to the grass-field.

DEBILITY.—Thus far I have regarded dropsy of the legs as originating in plethora or congestion, and consecutive inflammatory diathesis, either general or local: let us now inquire to what extent and in what manner *debility* may operate in its production. The circumstances of horses being commonly attacked with swelled legs during spring and autumn, the seasons when they are shedding their coats ; and of such horses in particular being the subjects of these swellings as are, from their tender age, their poverty or softness of condition, or their natural laxity of fibre, constitutionally weaker than others ; have led veterinary writers to ascribe the disorder to debility. For my own part, however, specious as this doctrine appears, I cannot consider debility to be concerned otherwise than *indirectly*. Horses whose systems are from any cause in a state of comparative de-

bility, possess a thinner or more watery kind of blood, with diminished powers of circulating that fluid: I do not regard dropsy, however, even in them—whose bodies we know to be so much more disposed to the disorder—but as the result of vascular disturbance, either general or local; which, after all, consequently becomes the *proximate* cause, debility being only the remote or predisposing one.

VARIETIES, or degrees of intensity, present themselves in swelled legs, ascending from the simple form we call *filled* to the state denominated *round*. A horse accustomed to exercise daily, will, from standing for a day or two without any, fill in his hind legs: those parts will become congested and slightly infiltrated, for want of the accustomed stimulus of locomotion. This is a failing, however, in regard to which horses exhibit remarkable differences: some will stand for days, nay, weeks, in their stalls, without evincing any disposition to fill; while others will hardly stand twenty-four hours without swelling. As a general rule, horses in condition, well-bred, possessing clean sinewy legs, and in the middle period of life, are least prone to fail in this way: independently of all this, however, there is something operative—but what we cannot explain—in peculiarity of constitution. Mere *filling* of the legs can hardly be said to amount to disease.

The case that especially calls for medical interference, is the one in which all four, or both hind legs, are, to use a vulgar simile, “like mill-posts:” they are swollen from the knee or hock to below the fetlock; they feel round and tense and warm, and pit on pressure; but do not evince any remarkable sensibility, such as they do in water farcy. The horse may be at the time off his feed, out of spirits, and feverish—pulse increased, skin warm, mouth warm and dry, membranes of the nose and eyes reddened. This accessory disorder, however, is as often absent as present: oftentimes the swelling of the legs appears as the only symptom of derangement.

THE REGIMEN OF YOUNG HORSES—their management in regard to *air*, *food*, and *exercise*, when received out of the hands of breeders or country dealers, and for the first time placed in stables for the purpose of being broke, or being rendered fit for

work—occasionally constitutes a very important part of the duty of a veterinary surgeon; the main object being, the averting of certain ailments and disorders to which a change of place and other circumstances has more or less predisposed them. The first and grand consideration is, that the stable they inhabit be spacious and airy, and well ventilated, and not suffered to grow foul from the accumulation of dung and urine. For the first month, their diet should consist of bran-mashes night and morning, and a feed of bruised oats, mingled with double or treble the quantity of hay-chaff, at noon. During the second month, in addition to this, a feed of bruised corn and chaff may be given in the afternoon. During the third month, one mash may be withdrawn, and a third feed of bruised corn and chaff substituted. In regard to the withdrawal of the other mash, and the allowing of entire oats in place of the bruised, I am of opinion that this last change in diet should not be made until such time as the animal is to be taken into regular work. Should any disinclination or disrelish for bran-mashes be manifested—which, if not at first, after a time will frequently turn out to be the case with some individuals—let *scalded* corn, i. e. oats steeped in boiling water, be substituted in lieu of them; but then, to such horses, the bruised corn given with the chaff should be either diminished in quantity, or else entirely withdrawn, depending on their respective condition and thrivingness. The custom of mingling bran with oats is a bad one: nothing so much disposes a horse to swallow his corn unmasticated as this incongruous mixture. Their *exercise*, for the first month, should consist of walking for half an hour, morning and afternoon; for the second month, of an hour morning and afternoon; for the third, of an hour and a half: during some part of which, if required, they may be trotted.

PHYSIC.—No sooner has a lot of young horses entered on their domestication, than it is deemed requisite to “to put them into physic.” I never, however, allow this step to be taken in a hurry: I have, on occasions, myself had sufficient reason to repent of such imprudent haste; and the mishap, in dealers’ stables, I know not to be very uncommon. The ordinary practice is

for the whole lot, well or ill, to get their physic the next morning after their arrival ; and it occasionally turns out that one among them, who happened at the time (though that probably does not become known till afterwards) to be “ not quite right,” “ a little unwell,” while purging with the rest, manifests an attack of inflammation of the lungs, of which the chances are two to one that he dies. Profiting by this experience, I always make it a rule myself to let the horses *settle* for three or four days in their stables before I order them any physic ; and then (excepting such as appear to be anywise amiss) I give them from five to six drachms of purging mass each, according as they happen to be three or four years old, in low or fat condition, of slender or full make, &c. Any one of the lot that is “ off his feed,” or that seems dull or mopish, or has a cold or cough, or in any other manner evinces indisposition, I not only exempt from this general physicking, but segregate, by putting him into a loose box, where he can be most conveniently treated apart according as his case, whatever it may be, may require. In the course of ten days or a fortnight, the first dose of physic may be followed by a second ; and this, from observations made on the effects of the first, we shall be prepared to better apportion. In another fortnight or three weeks, a third dose may be administered—one that will in general require the augmentation of a drachm of medicine ; though that, in course, must be regulated by the apparent strength or susceptibility of each individual’s constitution.

Under a system of management of this description, scrupulously and steadily adhered to—in regard to ventilation and purity of stable, quality and quantity of food, hours of feeding, times and duration of exercise, physicking, &c.—experience teaches us, young and hitherto undomesticated horses are preserved in health, or, at least, have such maladies as they are from the time of being stabled in a situation to contract, either altogether averted, or else divested of much of their violence and malignancy.

Should any one among them be attacked with swelling of the legs, such as I have described, let him be removed into a loose box, lose three or four quarts of blood, and take daily, until he purges, No. 1 of the following balls :—

## No. 1.

Take of Purging mass ..... 3ij  
 Venice turpentine ..... 3ij  
 Nitre, powdered..... 3ss  
 Mix and make into a ball.

## No. 2.

Take of Purging mass ..... 3j  
 Emetic antimony ..... 3j  
 Digitalis ..... 3j  
 Treacle sufficient to form a ball.

No. 2 is the preferable medicine, in case the animal exhibit febrile symptoms at the same time.

Instead of twice, the horse should now be walked out thrice a-day, unless a manifestation of fever forbid it; in which case both the duration and pace of the exercise must be diminished, or it may be necessary to abstain from it altogether. The operation of the purgative medicine may be followed up by the occasional exhibition of diuretics.

## WATER FARCY.

According to the accounts of our best writers on farriery, water farcy is not farcy at all—"it is indeed," as Gibson says, "another disease, and has little or no resemblance to true farcy, either in its causes, symptoms, or effects; and has only obtained this name through ignorance or custom." The same author give us the following brief description of the disorder:—

"The water farcy is of two kinds, one the product of a feverish disposition; the other is dropsical, and of that kind which in man resembles the *anasarca*, where the water is not confined to the belly and limbs, but shews itself in several parts of the body, with soft swellings which yield to the pressure of the fingers, as is usual in all dropsical habits. This last kind usually proceeds from foul feeding, or from the latter grass and fog, that often comes up in great plenty with long-continued rains, and breeds a sluggish viscid blood."

There is some truth in these observations: they are evidently the result of practice—of the reflections of a man accustomed to write from what he had seen and experienced. The swelled legs we have been considering may, through continuance, through neglect of treatment, through exasperation by a repetition of causes, prove the forerunner of water farcy; though the latter is a disease oftener of distinct origin. It commonly attacks one, sometimes both hind legs; occasionally all four. The limb becomes, in the course of one night, enormously swollen from the thigh to the foot: the horse, when walked out, carries it stiffly along, but does not actually halt upon it. The skin of the limb feels hot and tense, and the animal manifests tenderness if it be violently pressed or squeezed. Day by day the tumefaction increases, with the heat and tensivity of the skin, and the tenderness becomes acute to that degree that the animal can hardly bear to have it touched, much less pressed; and never fails, should it be roughly handled, to catch up the limb, or rather thrust it out, in the most awkward manner possible to one side. At this time also appears upon the surface of the skin, drops (resembling dew-drops) of a transparent, yellow, albuminous fluid, looking like exudations from the perspiratory pores; to which symptom the disorder would seem to owe the epithet of “water” or “watery.” In fact, from this period it would appear that the disease confines its progress principally to the skin; for, if suffered to proceed, it is likely to end in genuine farcy, though now and then it will run into a virulent attack of grease.

THE FRENCH VETERINARIANS confound these disorders—they make no distinction between grease and simple swelled legs and water farcy: instead of viewing grease even as an idiopathic affection, they seem to regard it as a uniform consequence of water farcy, which they denominate *eaux aux jambes*—water in the limbs—and consider as a specific affection of the skin. From this doctrine, however, their best author, Hurltel d’Arboval, dissents: he considers the disorder as the result of some peculiar lesion of the bulbs of the hair.

PROFESSOR COLEMAN appears to regard water farcy either as an inflammatory affection, or as one originating in disease or functional disorder of the absorbent vessels of the limb. The Professor’s language is—“There is a disease farriers call *watery farcy*, which arises from an affection of the ab-

sorbents. The functions of these vessels become impaired from inflammation, and a deposition of serous fluid is the result. When this disease takes place in the winter months, it most commonly proceeds from going from cold to heat: but at this season of the year (summer) it cannot have such an origin. In the former instance, the arteries have their action increased: but in other cases we prove its existence in the absorbents from its not infrequently ending in common farcy."

**AUTHOR'S REMARKS.**—The value of Gibson's observations is much enhanced by the confirmation they appear to receive from Professor Coleman. The "feverish disposition" of Gibson is evidently the "increased arterial action" of the Professor; while the "dropsy" of the former will well bear comparison with the "affection of the absorbents" of the latter. For my own part, I attribute the water farcy I am now treating on, to *inflammatory action* of the capillaries or exhalants of the limbs generally—I regard it as an *inflammatory dropsy*, if I may be allowed the expression: at the same time I admit the existence of the disorder in another form—one in which there is disease of the absorbent vessels—wherein the presence of the fluid is, in some measure, ascribable to defective or diminished absorption. In addition to which, let it be remembered, that the first disorder may, and occasionally does, end in the last. In fine, I see no good reason myself for disturbing the pathology of Professor Coleman on this subject; nor any very great fault to be found with that of Mr. Gibson.

**CAUSES.**—Though we appear so far to have developed the nature of this disease as to affirm that it essentially consists in inflammatory action, we have not yet investigated how this action arises. Gibson's epithet, "*feverish disposition*," evidently imputes to it a febrile origin; and Professor Coleman's mention of its being produced "from going from cold to heat," is sufficient to convince us that he ascribes it to the same general causes that give rise to catarrh, inflamed lungs, ophthalmia, grease, &c. But why should the disease attack one hind leg in particular? or why both, to the exclusion of the fore legs? or why, occasionally, all four legs? or why the limbs at all in preference to the body? These are questions, which, in a general



way, I apprehend, we can no more answer than we can resolve why one eye is attacked with inflammation and not the other ; or why the windpipe is become diseased, and not the lungs. In a case in which one or all of the limbs have undergone any violent exertion, or where cold or wet and heat have been operating on any one or more of them, so far as the local influence of such agent is concerned, the cause is obvious enough. But are there not still many cases occurring we cannot account for ?

THE TERMINATION of water farcy is, as I have already stated, very apt to be true farcy ; though, when the disorder is opposed at its very onset by remedies such as I shall just now particularize, this hapless course is likely to be arrested. It may produce grease : it may end in resolution—in the subsidence of all tumour, and the disappearance of all disease—leaving the limb in the state in which it was prior to the attack. The most probable termination of the disorder however, even under the earliest and most effective treatment, and particularly in cases in which the tumefaction from the beginning has been excessive, is in callous and irreducible enlargement of the limb ; not thereby necessarily interfering with the action or even diminishing the utility of the member, though it is ever afterwards to be regarded as a part predisposed to similar disease, or, under certain influential circumstances, to an attack of veritable farcy.

TREATMENT.—However much practitioners may differ on the questions of the constitutional origin, specific nature, and organic seat of this disease, I should apprehend there could not exist much variation of opinion concerning the most efficient mode of treatment. Gorged with blood, distended—to bursting even—by internal effusion, hot, tense and tender, as the limb evidently is when first attacked, nobody can hesitate for a moment to draw blood : and this ought to be done to an amount that will sensibly impress the system. Abstract two gallons from a horse in condition ; one even from a subject not so ; and follow the bleeding up by the immediate administration of the following ball :—

Take of Purging mass.....	3ix
Calomel .....	3j
Mix and make into a ball ;	

Which done, let the animal be turned into a cool and spacious box, and fed on nothing else but sloppy mashies. The limb itself will be benefitted by being bathed in the steam of hot water, or by fomentation, and especially if much serous exudation be present: in another case I commonly prefer having the hair sponged with vinegar and water, in the proportion of 1 to 2, which will tend much to the abatement of the local heat and tenderness. Unless the operation of the physic forbid it, the animal should be walked out thrice a-day, for an hour each time. As soon as the physic is set or setting, it will, in general, be advisable to repeat the bloodletting. Let it, however, be understood here, that no vein in the tumefied limb is to be opened: in the inflamed and irritable condition in which the diseased parts are, any puncture into them would only serve to exasperate the inflammation; and the wound itself might turn into something like a farcy ulcer, or induce absorbent irritation—the very thing we want to guard against. Besides, it is the *system* that requires depressing, and not the limb in particular; and therefore bleeding from the jugular will answer every purpose. Rowelling the affected limb, though a common practice, appears to me more condemnable still: in fact, rowels are not needed at all—they do little or no good. As soon as the physic is completely set, let the horse take the following alterative ball daily, omitting it only at such times as it is causing purgation. When all or any fever that might have existed in the system has disappeared, and the limb itself seems to have been reduced to the utmost possible degree by the bleeding and the purging and the operation of the alteratives, we may give the following tonic ball twice a-day, and at the same time improve the diet; taking care, however, not on any account to remit the exercise.

*The Alterative Ball.*

Take of Purging mass .....	ʒiiss
Calomel .....	ʒj
Digitalis .....	ʒj
Venice turpentine .....	ʒij
Mix and make a ball.	

*The Tonic Ball.*

Take of Blue vitriol (powdered) .....	3j
Gentian (powdered) .....	3ij
Liquorice powder.....	3iij
Syrup of ginger, enough to form a ball.	

## SWELLED BELLY, SHEATH, BREAST, &amp;c.

## ANASARCA.

External dropsy, either in the form of œdematous belly and sheath and breast, or in that of swelled legs, is a frequent consequence and an occasional accompaniment of constitutional disease. When these external effusions happen early in the disorder, they may be viewed as omens of a favourable issue; but when they supervene during the decline of the inflammatory attack, they are ordinarily to be regarded as the unwelcome indications of similar depositions taking place inwardly, and which but too often prove of an irremediable nature. Hydrothorax is denoted—in common with other pathognomonic symptoms—by dropsy of the breast, extending often to the belly, and by swelled legs. Ascites is strongly indicated—in combination with certain other signs—by dropsy of the belly and sheath, such as proves of an obstinate or permanent nature, or else speedily returns, after having been by remedy entirely dissipated. Such swellings in these cases being the attendants or consequences of other disease, in course the treatment of them must form a part of that adopted for the original disorder, whatever it may happen to be: occasionally, however, anasarca presents itself to our notice as an idiopathic affection. The cellular membrane underneath the skin becomes filled with an aqueous fluid, the result of which is one or more diffused puffy swellings, having no defined limits, but most prominent in those parts of the body that are dependent, from the circumstance of the fluid gravitating through the cells of the subcutaneous tissue into them. These swellings have a soft, doughy, or flabby feel, and pit on pressure.

THE SYMPTOMS of a general and violent attack of anasarca

are—Tumour of the belly, the sheath, the loose skin in the space between the arms, the breast, the sides of the face and nostrils, the arms, the thighs, and the legs. These are the ordinary situations for anasarca swellings; though it does not always happen that all these parts are affected. In general, the legs are only secondarily affected; by which I mean, that the tumour in the first instance appears in the body and arms and thighs, and from them gravitates into the legs. At times the tumefaction is, when once it has commenced, very rapid in its progress: I have known it spread to such an extent in the course of a few hours after its first appearance, as to render the animal almost incapable of locomotion. Although the animal, when first attacked, evinces no apparent pain or uneasiness, and seems totally unconscious and indifferent concerning what is going on, feeding and looking as gay and lively as ever; yet, after a time—as though the presence of the effused fluid begat inflammation in the system—the pulse rises, the respiration becomes accelerated, the mouth hot, the eyes and nostrils reddened. A common accompaniment of the irritation now necessarily excited in the skin, is a sympathetic irritation (followed by an inflammation) of the air-passages: the animal coughs up, on occasions, a slimy straw-coloured sort of fluid, looking like a mixture of saliva and mucus and sero-albuminous effusion; at the same time that there is, probably, a bloody froth issuing from the nostrils. Where anasarca takes this turn, unless an immediate and effectual check be put to the disorder, it is likely to end in farcy and glanders. Now and then it will happen that the serous, as well as, or to the exclusion of, the mucous membranes, will partake of this dropsical disposition; and the animal consequently be in great danger of losing his life from water in the chest, or belly, or even head.

CAUSES.—Observations in my own practice have led me to remark, that horses that are turned out to strawyard, in the winter season, are the frequent subjects of anasarca: they leave a warm atmosphere for a cold and humid one; a generous diet for one that starves them—at least, comparatively so; and they drink *ad libitum* of water which may be, but most probably is not, of the most wholesome description. How all or any of

these changes may operate in the production of anasarca, I am not altogether prepared to explain. The skin will certainly receive a check in regard to its perspiratory functions; the air-passages, also, will feel the effects of cold and moisture; while the digestive organs will experience more or less alteration in their economy in consequence of the change of aliment.

THE TREATMENT I adopt for anascarca is of the antiphlogistic character early in the disorder, however I may find it necessary to modify it afterwards. I bleed, but not to a very large amount: I take away from four to six quarts, and repeat the evacuation, to half that quantity, if required. After blood-letting, I give immediately an ounce of purging mass, combined with a drachm of calomel. And next, I insert rowels or tents in the chest and belly: though, should these parts be much swollen, I would prefer making punctures into them with the lancet. Should the legs be cold, flannel-bandage them; also, clothe the skin warmly. Turn the animal into a loose box; but lead him out to exercise thrice a-day. As soon as the physic is set, let the alterative ball prescribed in water farcy\* be given daily, until such time as all inflammatory action seems to have left the system; after which, the tonic ball recommended for the same disease\* may be exhibited twice a-day: paying due attention all the while to the exercise. A repetition of the scarifications will often expedite the dispersion of the swellings about the body, sheath, or head, by giving issue to much of the collected fluid: make them with a spear-pointed lancet, and choose the most prominent and dependent parts for puncture. In one case, by accident, in making scarifications, I run my lancet into the spur-vein, from which the blood flowed in a very free stream: I at first heeded it but as a trifling occurrence, and took no further notice of it; but I was subsequently compelled, in consequence of its having continued bleeding for three hours, to have recourse to a compress and roller to suppress further hemorrhage.

There is yet another form of anasarca: at least, there is a disease of the belly, which, although it originates in external injury, is of consequence in practice, almost solely on account

\* For the recipes for these balls, vide pages 325, 326.

of the enormous dropsical tumefaction it occasions of the integuments of the abdomen, sheath, and chest; a circumstance that has led me (perhaps wrongly) to introduce it among dropsies. I allude to

## PUNCTURED BELLY.

Every now and then it happens that a horse receives a stab in his belly: a pair of scissors or a pitchfork is commonly the instrument inflicting the injury, and the situation of the wound is generally the lateral, inferior, and middle part of the abdomen. Accident, I cannot call it: too often is it the offset of the irritation of the moment of one engaged either in trimming the animal, or else in bedding him down. Should we happen to see the case recently after its production, we shall perceive a small wound dropping a straw-coloured serous fluid—unless it should be so recent that blood is yet congealed about it, or issuing from it—which, on examination with the probe, is very rarely found to penetrate the abdominal parietes: in fact, at this time there is so little to be seen, that, were the practitioner in his own mind not in apprehension of evil consequences, he would hardly conceive it requisite to take any further notice of the injury. Instead of suffering it to pass by unheeded, however, I would advise him to exhibit a strong dose of physic immediately, and place the animal at once on a bran diet. Should no untoward results follow the injury, all the possible inconvenience the purge can occasion, is that of keeping the horse two or three days out of work: on the other hand, should swelling of the belly supervene—which we are but too assured from practice is almost certain of being the case—then we have gained an important step in the treatment: we have procured purgation twelve or twenty-four hours sooner than, by waiting for the tumefaction, we should have done. In case we perceive the swelling rapidly increasing in volume, and spreading, and growing hot and hard and painful on pressure, we must lose no time in abstracting a tolerable quantity of blood—six quarts or two gallons from a strong subject—and after that, set a man to foment the belly with flannels dipped in a large tub of hot water placed directly underneath the body; and this fomentation must be steadily and unweariedly persisted

in. Should fever have developed itself in the system, and the swelling still be augmenting, we had better, after an interval of six or eight hours, draw more blood: and, in case the physic be setting, exhibit daily two drachms of purging mass in combination with four drachms of diuretic mass, until the purgation is renewed. In cases where the swelling acquires a large volume, and the skin is thereby exceedingly distended, I have experienced the best effects from *scarifications*—punctures about an inch in depth with a lancet: the free issue of blood they often induce proves of the greatest service. I am not friendly to the introduction of any sort of tent or rowel or seton, during the height or progress of inflammation; though I have found them serviceable as soon as it has begun to decline. Walking exercise will prove beneficial: the animal may be led about for half an hour at a time, in the intervals between the fomentations. After a free drain from the bowels has been kept up for some time, we may with advantage exhibit some diuretic medicine daily. As for the wound, that is of but secondary import. It may be dressed with any digestive application, such as the farriers' *black oil*, with a feather; or it may be dilated with a scalpel or bistoury: though I cannot profess myself an advocate for this latter practice.

Should the wound happen to have penetrated through the parietes of the belly, the danger of peritoneal inflammation will be added to that arising from external tumefaction: our most efficient remedies, however, will still consist in bleeding, purging, and fomentation; though now, as far as the wound is concerned, it will be most desirable to close it as speedily as possible. The hair may be shorn off from the skin immediately surrounding it, and a plaster and compress applied to its orifice, confined—unless the external swelling forbid it—by means of a broad roller or circingle. No dressing is required: indeed, the interior of the wound must on no account whatever be meddled with or disturbed. Should there appear a disposition in it rather to suppurate and discharge than close by adhesion, I would apply the budding-iron to its mouth; having the iron previously so shaped, that about half an inch of the pointed part enter the wound.

## SEROUS ABSCESS.

We meet with two kinds of abscess in veterinary practice:—the *purulent* and the *serous*. Of the former I have already spoken, both as a termination of inflammation, and in the form of strangles, poll-evil, and fistula\*: in this place I shall make some observations on the latter, it being in itself a kind of dropsical affection.

The ordinary situations for these swellings are upon the outer side of the quarter or thigh, in front of the stifle, and upon the breast, the shoulder, and the arm. Though circumscribed, they are occasionally of considerable volume. Their ordinary shape is ovoid, flattened upon the surface. They have a soft, elastic, fluctuating feel; and, when punctured, emit with considerable force of jet, a limpid, straw-coloured, aqueous fluid, very like the serum of the blood.

THE CAUSES producing these swellings are not at present in my mind determinable.

TREATMENT.—It is time lost to set about attempts at dispersing or resolving these tumours. The most summary mode of getting rid of the swelling, is to plunge a lancet into it and evacuate it. Were we, however, to do nothing beyond this, we should find in a day or two that the tumour had become as large as ever. Evacuate it a second time, and the fluid still will speedily re-collect. In fine, to make a cure, we must either follow up the evacuation by throwing into the cavity with a syringe one of the following injections, or else pass a seton through it.

Take of White vitriol.....	℥j
Distilled water.....	℥j.—Mix.
Take of Lunar caustic .....	gr. v
Distilled water.....	℥j.—Mix.

After the injection—or even after the withdrawal of the seton, which should only be retained until a laudable pus is produced—a compress and roller (should they be applicable) will be found much to assist the granulation and agglutination of the sides of the cavity.

\* Vide pages 71, 163, 194, 201.



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